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ORIGINAL ARTICLES.

THE OPHIDIANS.

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In the summer of 1851, I began on Colonel's Island, Liberty County, Ga., a series of investigations upon the anatomic and physiologic differences and relations of various animals, and especially of closely related species. These have been continued from time to time in my leisure moments, but the interruptions necessary upon the performance of the practical duties of an arduous and exacting profession, and wholly unavoidable during four years of active service in the Confederate Army, 1861–1865, have prevented the rapid and continuous prosecution, and the desired perfection of these, to me, interesting labors. The preparations which I have dissected, injected and preserved, numbering over two thousand, are at present deposited in the Museum of the Medical Department of the University of Louisiana (now Tulane), and serve as illustrations of some of the results of these investigations.

The following measurements and drawings with the accompanying observations are mere fragments of my labors, which were designed to illustrate the principles of classifications, and the natural relations of animals, and especially the relations of species; we hope, however, that they will be sufficient to illustrate the proposition that closely related species present anatomic differences which can not be referred to the action of mere physical forces or to any process of gradual evolution or transmutation of species.

We shall confine our observations almost entirely to the *Ophidia* or serpents, as they form a natural order, presenting peculiar anatomic and natural characters; and being without feet, or obvious external organs of locomotion, they appear to present the simplest and best field for the investigation of the anatomic relations of closely allied species.

The investigations will be confined chiefly to the relative positions of the internal organs and the minute anatomic differences presented by the position, size and structure of the respiratory organs.

As the *Chalcida* form the connecting link between the *Sauria* especially, and the *Ophidia*, we will examine in the first place, the *Ophisauris ventralis Linn.*, which is vulgarly regarded as a true *Ophidian*, and familiarly known as the glass snake.

GLASS SNAKE (MALE)—OPHISAURIS VENTRALIS—DAUDIN.

Anterior extremities rudimentary. Inferior extremities rudimentary; ossa innominata present. The tongue resembles this organ in the *Scincoidea*, as in the *scorpion*, or red-headed lizard (*Plestodon erythrocephalus*. The *Ophisauris* unlike the true *Ophidians* has two lungs. Right lung much larger and longer than the left, as shown in the figures. The lungs are much more vascular than those of serpents, are without terminal membranous sacs, as in serpents, and are provided with distinct divisions, as in the *Chelonians* and *Sauria*. The heart is situated opposite the bifurcation of the bronchial tubes and their junction with the lungs. The vascular portion of the lungs lie chiefly below the position of the heart. The lungs are not placed symmetrically in the general abdominal and thoracic cavity, but are apparently adapted to the general form of this cavity. The left small lung lies higher up than the right or long lung. Numerous dissections of both male and female specimens of various sizes and ages confirmed the preceding observations.

The gall bladder is situated in the liver, and not at a distance from the liver, as in the case of true serpents. The general shape and appearance of the liver and also the situation of the gall bladder resembles more nearly that of the congo snake (*Amphiuma*). Distance of gall bladder from anterior border of liver four inches, length of abdominal cavity seven inches. The liver lies principally to the right, and the stomach to the left of the median line. Spleen disconnected from the pancreas, and on left of median line. Pancreas resembles the appearance of this gland in *Ophidians*.

This family, *Chalcida*, is evidently from its anatomic structure, closely related to the family *Scincoidea*.

Kidneys, lobulated and elongated, resembling in their symmetrical position and in their slender lobulated shape and yellowish color the kidneys of *Ophidians*. The kidneys, on the other hand, in the saurians are short and leaf-shaped and lobulated in a different manner.

OPHIDIA—BROGNIART—SERPENTES—CUVIER.

The name *Ophidia*, was first given by M. Alexandre Brogniart to this order which comprehends the animals designated by Linnæus under the collective appellation of amphidia serpents; the order *Ophidia* adopted by M. M. Cuvier includes three families: *Anguis, Pseudophus ophisaurus, Anguis and Aconitas, Amphisbæna* and *Serpentes* or true serpents.

CROTALOIDEA—CROTALUS DURISSUS (BANDED RATTLESNAKE).

The specimen furnishing the following observations was a female. It had 180 large broad plates in the abdomen, 18 broad plates in anterior surface of tail, and 6 divided plates, making 27 plates upon posterior surface of tail.

The bronchial tube or windpipe passes down through the entire length of the vascular portion of the lung, and expands finally into a membranous bladder, without cellular divisions, consisting of a strong transparent membrane, the circumference of which when inflated is equal to that of the animal. The upper portion of the lungs are thicker and more vascular than the inferior portion, the vascular gradually

diminishing until the lungs expand opposite the superior portion of the liver, into the large membranous sac. The small undeveloped lung opens into the bronchial tube opposite the ventricle of the heart. The bronchial tube or windpipe, consists of semi-annular cartilages, which not only give off branches and meshes of fibrous tissues to the lungs, but is divided along its four surfaces; the edges being serrated and so arranged that pressure, like that of an animal in the esophagus during the act of swallowing, will cause the complete closure of the elastic rings, the serrated edges fitting accurately into each other; and by this arrangement it is possible for the air to pass to those portions of the lungs which lie below. The length of the vascular portion of the lungs which begin near the opening of the windpipe, lying on either side of it was about nineteen inches. The heart is situated near the line of the disappearance of the more vascular portion of the lungs. The vascular portion of the lungs are composed of small hexagonal and pentagonal and irregularly shaped ovules, vesiculæ or cells as represented in the figures and especially in the magnified view. The diameter of these cells, varies from one-hundredth to one-tenth of an inch in diameter. The walls of these cells appear to be without doubt derived from the circular rings of the windpipe, as if the latter was the basis or skeleton of the lungs. The hexagonal shape of the cells of the lungs resemble those of the poison moccasin (*Trigonocephalus piscivorus* in their general shape; they are, however, not so much elevated along the borders. The upper portion of the lungs of the *Crotalus durissus*, resemble somewhat the vesiculæ or cells of the lungs of the alligator, gopher and frogs, in that they are abundantly supplied with blood vessels, and appear when the lung is opened, of a florid red. On the other hand, the large bladder in which the lungs terminate resembles, to a certain extent, the lungs or membranous sacs of the water heart.

The length of the alimentary canal in the *Crotaloidea*, is a little less than that of the entire body; thus in a specimen of the *Crotalus adamanteus*, forty-eight inches in length, the entire alimentary canal measures forty-two inches. The esophagus or gullet is, as a general rule, nearly equal in length to the stomach and intestines, when the alimentary canal is devoid of food. Both the esophagus and stomach are capable of great distension. When the rattlesnake swallows an animal, as the rabbit or squirrel, the diameter of which is greater than that of the reptile in its ordinary state of fasting, the esophagus expands and receives the animal which, gradually, by the action of the muscles is forced into the thicker and more muscular stomach. Digestion proceeds in the stomach and not in the gullet, and appears to be more active in the inferior portion of the stomach where it joins the alimentary canal.

I have examined the alimentary canal of *Ophidians* in all stages of digestion, from the moment the prey has been swallowed until it is completely dissolved in the gastric juice, and I have carefully dissected and preserved such specimens.

I have witnessed the battles of reptiles with each other and observed that when they devour one another, they always swallow the head first, and when the conquered enemy is nearly of the same length with its captor, its head is pushed down to the farthest extremity of the cavity of the stomach, which may be greatly displaced downward, reaching nearly to the anus.

I have specimens in which the gastric juice has completely digested and cleaned all the flesh from the bones of the head and from the cervical vertebræ, while those portions in the gullet are in their natural state, without the disturbance even of the scales and skin. By the movement of the intestines, the bones after the removal of the flesh become enveloped in the hair and fur of the animal swallowed.

The liver in the *Crotaloidea* is a large flat organ. The color of the liver appears to be somewhat lighter than in other *Ophidians*, being light brownish red; its size is relatively larger, and its general shape broader, thicker and shorter than in the *Trigonocephali Colubers* and other *Ophidians* of America. In full-grown specimens the kidneys vary in length from five to seven inches and, like the kidneys of *Ophidians* generally, are divided into numerous lobuli; these organs, however, are shorter, broader and thicker, relatively to the size of the serpents in the *Crotaloidea*.

After a careful comparison of the anatomy of the *Crotalus adamanteus* with that of the *Crotalus durissus*, I have been unable to determine any essential differences in the structure of the lungs, the arrangement of the bronchial tube, or in the general form of the organs. The former attains a larger size than the latter, and has a much more circumscribed range, not being (as far as is known) found north of Carolina.

On the other hand, the *Crotalus durissus* is found in nearly all parts of the United States. In both species, the musk glands opening near the anus are large and will develop and emit a most nauseous, depressing and heavy odor.

CROTALOPHORUS MILIARIUS—("GROUND RATTLESNAKE" —"HOGNOSE RATTLESNAKE").

The specimen which yielded the following measurements was a male, 19½ inches in length, with 128 abdominal plates, 26 subcaudal plates, two rattles and a button. The bronchial tube runs down through the vascular portion of the lungs, and expands into a membranous sac (as in the *Crotalus durissus* and *adamanteus*) half an inch below the apex of the heart. The bronchial tube is well defined, having two free borders with serrated edges, and giving off fibrous rings to the lungs, as in the *Crotaloidea*. The vascular portion of the lungs is divided into hexagonal cells, the fibrous walls of which are divided from the bronchial rings. These cells resemble in their structure and shape and their relations to the bronchial tube, these of the *Crotaloidea;* the only difference is, that they are small, having a diameter from less than one-twentieth to less than one-hundredth of an inch in diameter. Right lung longer than left, and situated a little higher up in the abdominal cavity. The liver, kidneys and the lungs are more delicate in shape than in the *Crotalus*.

The general anatomy of the *Crotalophorus*, however, is similar to that of the *Crotalus;* the rattles and the poison bag and fangs are also similar in their structure.

TRIGONOCEPHALUS—OPPEL—TRIGONOCEPHALUS PISCIVORUS—LACÉPEDE—(WATER MOCCASIN).

The lung of the water moccasin presents an analogous arrangement to that of the rattlesnake in this respect—that the bronchial tube runs down along the vascular portion of the lungs, and sends off divisions which are arranged into distinct hexagonal cells.

The lung of the water moccasin, however, is more vascular and more distinctly cellular than that of the

rattlesnake. The cells of the lungs of the water moccasin are much more perfect in their form than those of the *Crotalus*, being regular hexagonal figures, like the honeycomb. The diameter of the cells are more uniform and somewhat larger than those of the *Crotalus*, as a general rule, although the largest do not exceed in diameter one-tenth of an inch. The liver of the *Trigonocephalus piscivorus* is large, but not so broad and relatively short as in the *Crotalus*.

TRIGONOCEPHALUS CONTORTRIX — LINNÆUS — (COPPER-HEAD).

The length of the specimen (female) from which these measurements were taken was thirty-one and one-half inches. It was captured in the spring of the year 1862, in Liberty County, Georgia, in company with a male reptile of the same species. They were evidently mates. The chief difference which I noted between the two, which were very nearly of the same size, was that the head of the male was larger. They appeared to have shed their skins recently and in both their colors were brighter. With the exception of the generative apparatus, no special difference of anatomic structure or arrangements were noted upon careful dissection and comparison. These reptiles were kept in confinement for some time, and I instituted a series of experiments with their poison, causing them to strike dogs, cats and fowls. The results of these experiments will be noticed elsewhere. I will simply observe, that the effects of the poison of the copper-head resembles that of the poison of the rattlesnake, and cause profound changes in the capillary circulation and in the constitution of the blood. The dissections are preserved in my private collections.

The rudimentary lung of the female opens into the bronchial tube, opposite position of apex of heart. The bronchial tube runs down through the vascular portion of the lungs as in *Crotalus* and *Crotalophorus* and *Trigonocephalus piscivorus*. The arrangement of the bronchial tube is similar, being open or slit along the median line in the interior of the membranous vascular bag, constituting the lung, and the edges are serrated. Cells of the vascular portion of the lungs are hexagonal, as in *Trigonocephalus piscivorus;* they are more numerous, more regular, more inclined to the ovoid form, and have more elevated and better defined margins than in the *Crotalus* and *Crotalophorus*. Diameter of cells vary from one-tenth to one twenty-fourth of an inch. The meshes or fibrous cells issuing from the annular rings of the bronchial tube, increase in size gradually from above, downward. The largest meshes or cells which exceed one-tenth of an inch in diameter are to be found at the commencement of the membranous bag or sac into which the lungs expand, below the apex of the heart. Many of the cells in the central and more vascular portion of the lungs present an oval form, losing their hexagonal figure gradually in the oval or circular.

It will be seen from the preceding observations that the poisonous *Crotalus*, *Crotalophorus* and *Trigonocephalus*, which present several points in common in their exterior form and appearance; the *Crotalus* having the rattle at the end of the tail in common with *Crotalophorus*, and the latter having the plates in the head; and the three genera having, similarly, large triangular heads with poisonous fangs and glands, also manifest marked affinities in their internal structure. It is certainly a point of great interest that the arrangement of the bronchial tube and the general structure of the cells of the lungs should be similar in the three genera and almost identical in the closely related species.

The *Elapsoidea*, *Elaps* of Schneider and Cuvier. Only one genus of this family inhabits the United States; the *Elaps fulvius* (bead-snake, harlequin snake) is the northern representative of the dreaded *Elaps lemniscatus* of South America.

ELAPS FULVIUS—LINNÆUS—(BEAD SNAKE—HARLEQUIN SNAKE).

This reptile has been described by Dr. John Edwards Holbrook and others, as being characterized by fixed and permanently erect fangs. As far as my observations extend, the fangs are capable of some motion, although ordinarily occupying a more erect position than the fangs of the *Crotalus*, *Crotalophorus*, and *Trigonocephalus*. This reptile is generally regarded as harmless, in the southern portion of Carolina and Georgia, where it is comparatively abundant, being frequently dug up during the harvesting of the sweet potato (*Convolvulus batatas*). Dr. Holbrook[1] in his "North American Herpetology," says: "The individuals I have seen have been of very mild character and could not be induced to bite under any provocation whatever. Indeed, although possessed of poisonous fangs, they are universally regarded as innocent snakes, and are constantly handled with impunity, never to my knowledge, having injured any one. It is worthy of remark that this animal, which is the northern representative of the dreaded *Elaps lemniscatus* of South America, should be so gentle and harmless, although possessed of the same instruments of destruction."

Marc Catesby, in his "Natural History of Carolina, Florida and the Bahama Islands," evidently describes this reptile under the name of the "Bead snake." He says: "They live mostly under the ground and are seldom seen above, but are frequently found and dug up with potatoes, at the time these roots are taken out of the ground, which is in September and October. They have nothing of a viper, either in form or quality, but are very inoffensive."

Catesby figures with this reptile, in the same plate the Virginian potato; and while the colors are somewhat different, still the general form of the snake, and the shape of the head is characteristic of this reptile, and this alone.

As I possess a copy of Catesby's "Natural History," I have been able to examine and compare his figures and descriptions with the actual specimens at my leisure, and I feel with Dr. Holbrook, that Dr. Garden's criticism is too severe.

After careful examination and inquiry concerning this reptile I am convinced that it is by no means harmless, but that its bite is dangerous and may cause death, even in the human being. I have not only known small animals to be killed by it, but during the late war, a Confederate soldier was killed at Pensacola, Florida, by a bite from one of these snakes upon the throat. Believing that the reptile was entirely harmless he was playing with it at the time that he received the fatal stroke. Death took place in the course of a few hours. I saw the snake which caused death, and it was the *Elaps fulvius*.

[1] North American Herpetology, or a Description of the Reptiles inhabiting the United States, by John Edwards Holbrook, M.D., etc. Vol. III, p. 51.

The *Elaps fulvius* is also at times, at least, rapacious, and preys upon other reptiles. Thus, I have in my possession, an *Elaps* which has swallowed a black snake (*Coluber constrictor*) nearly equal to it in length. The stomach has been pushed nearly to the anus, and the gastric juice has completely dissolved the flesh from the bones of the head and cervical vertebra, while the main portion of the snake, including the body and tail lying beyond the stomach in the distended esophagus, is in a state of perfect preservation. The bronchial tube extends down alone for five and one-half inches below the apex of the heart, where it expands into a bright vascular sac, with small well-defined cells. The rudimentary lung opens just opposite the apex of the heart. The cells of the vascular portions of the lungs are perfect hexagonal figures. The cells are much smaller than in the lungs of the *Crotalus*, *Crotalophorus* and *Trigonocephalus*, the largest being not more than one-fiftieth of an inch in diameter, and the smallest not less than one one-hundredth of an inch.

In the *Elaps fulvius*, the bronchial tube does not extend through the vascular portion of the lungs, as in *Crotalus*, *Crotalophorus* and *Trigonocephalus*, but after the expansion of the vascular pulmonary bag, its rudimentary existence is marked by a fibrous band running down the central portion of the vascular lung. Length of vascular portion of lung, two and one-fifth inches.

It will be observed that marked differences of anatomic structure and especially of the lungs, are found in the four genera of poisonous snakes found in the Southern United States of America, viz., *Crotalus*, *Crotalophorus*, *Trigonocephalus* and *Elaps*. The three former correspond to a certain degree in external conformation and internal anatomic structure; the latter differs in both external conformation and internal anatomic structure. The *Elaps fulvius* resembles, in the general shape of the body, as well as in the shape of the head and neck, the *Rhinestoma coccinea*, of Blumenbach. The position of the heart, and the relations of the bronchial tube, as well as the general shape of the organs are similar in the two genera. Like the lung of the *Elaps fulvius*, that of the *Rhinestoma* begins below the apex of the heart.

Schlegel errs greatly when he associates the *Rhinestoma coccinea* with the *Heterodontes*, for it differs from them, not only in its external form, but also in the structure, relative size and position of the internal organs and especially in the position and structure of the lungs. In the American vipers (*Heterodon Niger*, *H. platirhinos* and *H. simus*) the bronchial tube joins the lungs or vascular portion at an acute angle, and one branch of the lung runs up as a distinct sac, along the bronchial tube toward the head.

OPHISAURIS VENTRALIS—DAUDIN—GLASS SNAKE (MALE).

Length of this snake, twenty-five inches; length of right lung three-eighths inches; left lung one-third inch; tail thirteen and five-eighths inches; distance from tip of head to apex of heart three inches; to superior border of liver three-fourths of an inch; length of the liver one inch; breadth four-tenths of an inch.

CROTALOIDEA—CROTALUS DURISSUS—(BANDED RATTLESNAKE).

The specimen furnishing the following measurements was a female; length of snake from extremity of head to the junction of the rattles with the tail, fifty-one inches; length of head and body, forty-seven and one-half inches; length of tail, three and one-half inches; length of abdominal cavity forty-seven and one-half inches; distance of apex of nose to apex of heart, nineteen and one-half inches; to superior border of liver, twenty inches; length of liver, twelve inches; breadth, one and three-tenths inches; distance of inferior border of liver from gall bladder, one and one-half inches; as usual there was a small separate liver along the course of the vena cava.

CROTALOPHORUS MILIARIUS—(GROUND RATTLESNAKE, HOGNOSE RATTLESNAKE).

This specimen was a male and yielded the following measurements: length of head and body, sixteen eight-tenths inches; length of tail, two and seven-tenths inches; length of abdominal and thoracic cavity (as there is no diaphragm, the entire cavity is included under the head) sixteen inches; length of alimentary canal, sixteen and one-half inches; distance of apex of heart from extremity of head, six and four-tenths inches; length of vascular portion of lungs, four and four-tenths inches; distance from end of head to superior border of liver, six and seven-tenths inches; length of liver, two and eight-tenths inches; breadth of liver, three-tenths of an inch.

TRIGONOCEPHALUS CONTORTRIX—LINNÆUS—(COPPER-HEAD).

The length of this specimen (female) from which these measurements were taken was thirty-one and one-half inches; length of head and body twenty-seven and one-half inches; length of tail four inches; number of abdominal plates 153; of subcaudal plates, 44; the tail terminated in a horny point, or hook-like button, which appears to be the representation of the rattle in the *Crotalus*. Length of abdominal and thoracic cavity twenty-six inches; length of alimentary canal twenty-six inches; distance from end of head or point of nose, or snout, to apex of heart, nine and one-half inches; length of vascular portion of lung eight inches; distance of extremity of head from superior portion of liver, nine and three-fourths inches; superior border of liver situated one-fourth of an inch from the apex of heart. Length of liver, five inches; breadth, three-fourths of an inch; length of right kidney three and one-half inches; breadth of right kidney, four-sixteenths of an inch; length of left kidney two and one-half inches; breadth, five-sixteenths of an inch; distance of inferior border of kidneys from anus, one and one-half inches.

ELAPS FULVIUS—LINNÆUS—(BEAD SNAKE—HARLEQUIN SNAKE).

The specimen furnishing the following measurements was a female; length, twenty-six and one-half inches; it had 221 abdominal plates and 34 subcaudal plates. Distance of apex of heart to extremity of head, five and one-half inches; distance of superior portion of liver from apex of heart, six and one-half inches; distance of apex of heart from superior border of liver one inch; length of liver six inches, breadth, three-tenths of an inch; length of abdominal cavity, twenty-three and three-fourths inches; length of head and body, twenty-three and three-fourth inches; length of tail, two and one-fourth inches; length of right kidney, one and one-half inches, breadth, two-tenths of an inch; length

of left kidney one inch, breadth, three-sixteenths of an inch. Kidneys small and flat. Ovaries contained eggs in various stages of development. Length of alimentary canal twenty-three inches.

CONCLUSIONS.

From the preceding observations, it is evident that:

While all *Ophidians* are formed upon a general plan and resemble each other in the general form of the body, and structure and arrangement of the internal organs, at the same time the different genera are distinguished by essential differences of structure.

Closely related species present essentially the same structure and arrangement and relative position of the internal organs, and the similarity of external appearance and form and of habits and instincts, is attended by a comparative similarity in the structure and relations of the internal organs.

It might well be doubted whether, in certain cases, as in the *Crotalus* and *Heterodon*, some of the species of naturalists might not be mere varieties springing originally from the same common stock or original parents.

Marked differences are observed in the position and structure of the lungs in different genera, and, in fact, of all the organs; this is the best plan adopted for minute and differential anatomic investigations. That the arrangement of the bronchial tube and hexagonal cells is not characteristic of the poisonous *Ophidians* is shown, on the other hand, by the absence of such arrangement in the *Elaps fulvius* (harlequin snake) which is poisonous, and, in the other, by the presence of a similar arrangement of the bronchial tube in the *Coronella getula* (king snake). At the same time there is a wide difference between the structure of the lung in the latter and in the *Crotaloidea*.

We can only attribute these marked differences of internal structure in animals of the same growth, the same colors, and subjected to precisely the same climatic influences, to the original endowments or characters of the originators of the different genera; such characters being impressed by the Creator by his direct creative act. We can not conceive of a harmless reptile developing in virtue of "innate powers," or in virtue of innate desires and selection a poisonous gland, any more than we can conceive that by such causes the peculiarities of its lung were gradually altered and evolved.

These researches establish the important fact, that peculiarities of genera are dependent upon peculiarities of internal structure. Similar well-marked differences may be shown to exist in the different classes of warm-blooded animals; but the demonstration is more clear and more valuable in the lower and more simply constructed *Ophidians*.

The influence of physical agents upon the developments and variations of species is confined chiefly to alteration of color, size and vigor, and the cutaneous and osseous system, and not to direct structural alterations of the internal organs. This will be illustrated by investigations chiefly into the changes of color in the human race, and more especially of albinism in the negro race.

THE WILLIAM F. JENKS MEMORIAL PRIZE of the College of Physicians of Philadelphia, for 1895, has been awarded to Dr. Abram Brothers, of New York, for an essay on "Infant-mortality During Labor, and its Prevention."—*Medical News*, Nov. 9.

A REVIEW OF URETERAL SURGERY.

An Address delivered by request before the Toledo Academy of Medicine, June 28, 1895.

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The revelations of modern surgery are daily demonstrating that the ureter, like the appendix vermiformis, has for ages been the cause of numberless fatalities that have been credited to idiopathic causes.

Each one of them covers an exceedingly important sphere in abdominal surgery, and to the modern observer it seems strange that both of them should have escaped careful observation all these years. One, although having no known physiologic place in the human economy, plays a very decided pathologic rôle when affected with disease. The other has a distinct physiologic function to perform, which if interfered with, is liable to cause grave disturbance, if not rapid dissolution.

In glancing over the mortality records of the last decade, we are not surprised at the large death roll attributed to the so-called idiopathic peritonitis, especially when we remember that death from disease of, or injury to the ureter, as well as that of the vermiform appendix was seldom if ever recorded. Within the last ten years—thanks to aseptic and antiseptic surgery which have made possible the modern advancement of abdominal surgery—surgeons have discovered that much if not all the so-called idiopathic peritonitis is *secondary*, and much of it has been attributed to diseases of the vermiform appendix. Likewise the laparotomist has discovered that the ureter, which for cycles unknown has rested undisturbed, has played an important part in the diseases peculiar to the abdominal cavity. It is astonishing when we look over the literature pertaining to the ureter that prior to 1880, when an article was written by Emmet, we are unable to find anything on this important subject. Following Emmet, we find an article by Staples, written in 1884, and another by Galland, of Paris, in 1885.

From this on, reference to the surgical treatment of the ureter becomes more frequent, until up to the present time there have been written more than eighty different articles, pertaining either directly or indirectly to the surgery of the ureters. That the ureter opens up a legitimate field of surgery, is beyond a question. That the proper surgical treatment of the ureter may save a nephrectomy or even life is without controversy.

These facts have led various operators to make numerous experiments, with a view of not only discovering some reliable method for the surgical treatment of the ureter, but to simplify them and, so far as possible, rob them of much of their danger and establish them as legitimate and reliable surgical procedures. To Dr. Howard A. Kelly, of the Johns Hopkins University of Baltimore, the profession owes much for the modern advancement in ureteral catheterization.

It is true, Simon sounded the ureter as early as 1875, Grunfield in 1877, Skene in 1889, Morris and Wells in 1893. Yet none of these distinguished authors have given us so much valuable and practical information in reference to the catheterization of the ureter as Kelly. With the aid of the cystoscope, the electric light and the delicate ureteral catheter, not

only the walls of the bladder may be subjected to ocular inspection, but either ureters may be sounded or catheterized at the will of the operator. The ureters may be catheterized without the cystoscope by simply depending on the touch, but this is not nearly so reliable, and where the walls of the bladder are thickened by disease it is often impossible. With the aid of the ureteral catheter, such as I herewith exhibit, devised by Dr. Kelly, we are enabled to relieve stenosis of the ureter where it occurs within the lower third; or where there is disease of one or both kidneys, we are enabled by catheterizing each ureter to determine by an analysis of the urine collected in this manner whether both of the kidneys are diseased, or, if but one, which one. The use of the ureteral catheter is, therefore, not only an important factor in the diagnosis of renal diseases, but of no small value for the treatment of stenosis of the ureter.

Where valve formation and stricture of the ureter occurs so high up as to be beyond the reach of the catheter or sound, resulting in hydro- or pyonephrosis, nephrectomy and even nephrotomy may often be avoided by an operation with a view to the reëstablishment of the lumen of the ureter.

Fenger of Chicago, reports a number of cases of this character relieved by plastic operation after the method of Henecke-Mikulicz, which consists in a longitudinal division of the stricture and transverse union of the longitudinal wound, which shortens the ureter in proportion to the length of the stricture. Professor Fenger prefers this method of operating to that of resection of the stricture as performed by Kuster. Yet they both require great care in order to avoid extravasation of urine and they are both done at the expense of the length of the ureter. Either method, however, we consider much more desirable than implanting the ureter into the vagina, perineum or the abdominal walls.

Page of London, reports several cases of rupture of the ureter, in the *Annals of Surgery*, for May, 1894, the treatment of which was anything but satisfactory. He closed his article by saying "that the question of treatment can not be closed without a consideration of the possibility of suture of the ureter and the prevention thereby of all the trouble which these various cases suffered." Notwithstanding this suggestion, he rather discourages the plastic operation and suggests in the treatment of a ruptured or stenosed ureter that, "it is one thing to find and expose the ureter in these conditions, and quite another thing when there is no fixed calculus to mark its position."

Herman Mynter, of Buffalo, New York, reports a case, in the *Annals of Surgery*, December, 1893, of valvular stricture of the ureter, which was closed by a plastic operation, which resulted successfully and in fifteen days after the operation the patient was discharged feeling well. In a recent number of the *University Medical Magazine*, Prof. Chas. B. Penrose, of Philadelphia, reports a successful operation where the ureter was involved by a scirrhous cancer of the cervix uterus, in which it became necessary to excise an inch of the ureter, which was afterward implanted high up in the bladder, after Van Hook's method. In this case there was no symptom of bladder or renal disturbance and the patient left the hospital twenty days after the operation to all appearance well, although six months later she is reported suffering pain in the right iliac region, suggesting the probability of recurrence of the disease. This operation shows that the implantation of the ureter high up in the bladder is a successful and practical procedure.

In an exhaustive paper read by Dr. Weller Van Hook of Chicago, before the Section of Surgery and Anatomy of the AMERICAN MEDICAL ASSOCIATION at its Milwaukee meeting, the Doctor arrived at some thirty-two conclusions in reference to the surgical treatment of the ureter among which he states, in conclusion 6: "Longitudinal wounds of the ureter at any point, heal without difficulty in the absence of septic processes, under the influence of ample drainage."

In conclusion 14, he says: "In complete transverse injuries of the ureter in continuity, union must not be attempted by suture."

In conclusion 16, he advises: "In complete transverse injuries of the ureter very near the bladder, the duct may be implanted, but with less advantage, into the bladder directly." The feasibility of this latter method is demonstrated in the case referred to above, by Professor Penrose. In conclusion 15, Dr. Van Hook states that: "In complete transverse injuries of the ureter in continuity, union without subsequent scar contraction may be obtained by the writer's method of lateral implantation."

Where the ureter is too short to reach the bladder, Dr. Van Hook recommends the making of a vesical diverticulum. This is accomplished:

1. By implanting the ureter upon the skin of the abdomen in the median line as near the bladder as possible. Close the abdominal walls as usual, except for the presence of the ureter.

2. When the patient is fully recovered from the primary operation, open the structures composing the abdominal wall, between the ureter and the pubes, down to the peritoneum and bladder. The peritoneum must not be opened. The bladder may be extended and raised exactly as in suprapubic cystotomy.

3. Make two incisions in the bladder parallel to the median line, beginning as near as possible to the peritoneum without prejudice to its integrity, carry them down at a distance of about 15 mm. apart toward the neck of the bladder under the guidance of the finger. With scissors curved on the flat, the two incisions are now united at the lowest point and hemorrhage is controlled with pressure forceps. It will be seen that we now have at our disposal a vesical flap of considerable extent hinged above by a nutrient pedicle.

4. The ureter is loosened from the skin and brought well down toward the flap, which is simultaneously raised to meet it. The vesical flap is firmly fastened back in its new position by catgut sutures, passing through the neighboring muscles of the fascia, and the end of the ureter is held in position by light catgut sutures which pass through the loose peri-ureteral connective tissue, if possible, and through the muscular structures near at hand.

5. We are now in position to sew together the edges of the flap to form a tube, in the upper end of which the ureter is introduced, and to carry a similar row of light catgut sutures down the bladder wound itself. The lower angle of the vesical opening would best be left open for the sake of drainage. It will in all probability cause no trouble in healing. The upper part of the skin wound together with the fasciæ may be closed. Under careful antiseptic treatment this procedure ought to be practicable, and as easy as the majority of the operations daily undertaken.

The Doctor says he has practiced this method with considerable success on the cadaver, and argues that "we may safely say that, without opening the peritoneum, the bladder can be plastically extended to meet the ureter when that duct is brought out of the abdomen at any point not exceeding three and one-fourth inches inferior to the umbilicus." Hypothetically this is a very handsome operation, but before we would feel like indorsing it we would like to see its results on the *living* rather than the *moribund* subject. There is no question but what the ureter, when sufficiently long, could be implanted in the bladder, or it may be successfully connected with the vagina, but we are frank to admit that we do not consider the latter a very advisable operation, for reasons which we shall state hereafter. The question now arises, What method of surgical procedure shall we adopt where it is impossible to perform a plastic operation on the ureter that will unite it, when severed, or that will connect it with some other than normal connection with the bladder. In order to furnish, if possible, a connecting link in this very important part of the surgical treatment of the ureter, we have conducted numerous experiments with a view of implanting the ureter into the rectum, and so far as the implantation of a single ureter is concerned, our experiments have been fairly satisfactory and successful, as you will see by the specimen herewith submitted for examination.

Dr. Van Hook, however, takes serious exceptions to this method of disposing of the ureter. In his criticism he says: "The implantation of one or both ureters into the rectum is absolutely unjustifiable under all circumstances," and gives as his principal reason that these delicate tubes are inserted into the filthy rectum or intestine filled with solid, liquid or gaseous material to distend and defile the ureter and the pelvis of the kidney. Almost with the same breath the Doctor advises the implantation of the ureters into some portion of the abdominal wall and bring it out on the surface of the skin. Just as if the skin were not septic and would subject the ureter to septic infection as well as the intestine, beside placing the ureter in an unfavorable position while the patient is on his back for natural drainage, to say nothing of being occluded by the bowel when the patient is in the erect position.

Did it ever occur to the Doctor that the ductus communis choledochus in connection with the pancreatic duct commit the awful crime of discharging their contents into the descending portion of the duodenum? It would appear from the criticisms of Dr. Van Hook that even this would be unjustifiable under all circumstances. The Doctor seems to have forgotten that there is a law of natural immunity which not only protects us from infection from the septic material of the duodenum which might otherwise cause sickness and death, but protects the other natural channels from the same dangers, and makes it possible for him to make an opening for the ureters through the integument and the patient live, who if it were not for this law of natural immunity would become infected and die.

We were not neglectful of the fact that the intestines were septic, but we maintain that it gives the patient a better chance for recovery, especially where only one ureter needs to be implanted. It is certainly a much more desirable operation than bringing the ureter out to the surface of the skin and afflicting the patient with a urinary fistula the remainder of his days. The chance for stenosis is much greater on the one hand than on the other. In fact, there is more liability of stenosis where the ureter is brought out through the intestines and the walls of the abdomen than where it is implanted in the bowel or rectum. Where implantation into the rectum is successful, the patient is not disturbed with the foul odors of decomposing urine as he is in the case where it is implanted in the walls of the abdomen or the vagina. If I were to make a choice to-day between implanting the ureter in the walls of the abdomen or vagina and making a nephrectomy, I should prefer the latter, with the single exception of where there were but one kidney left to operate on, and then it would be folly to perform a nephrectomy and there would be nothing left but to implant the ureter in the walls of the abdomen, vagina, or the intestinal tract. To the unbiased mind it seems to me there is no question as to which of these three methods would be preferable. It is true in either one if septic infection or stenosis takes place, a nephrectomy can be made afterward but if this is not necessary, where each are successful, there is no question as to the comfort of the patient on one hand and the discomfort on the other.

In the case operated on by Dr. Leet of Scranton, Pa., where the ureter was implanted into the rectum and the patient recovered from the operation, but died subsequently of an entirely different disease not connected with the operation, I am told the patient suffered no inconvenience from the ureter being implanted into the rectum, and when a post-mortem was made there was found to be complete union without consequent nephritis so frequently referred to by Dr. Van Hook as the result of septic infection, neither was there stenosis of the ureter itself which he prognosticates as a most probable sequela in these operations.

Practical experience is always preferable to hypothetical theory. Notwithstanding the severe criticisms offered by Dr. Van Hook, on the implantation of the ureters into the rectum, we find in an article by Chaput, published in the *Archives Generales de Medicine*, January, 1894, that this distinguished operator performed this operation upon a patient Sept. 13, 1892, in which he states the results of the operation were excellent. Fever was entirely absent and the patient recovered without a single complication. In speaking of this operation, Deforest, in an editorial published in the *Annals of Surgery* for August, 1894, page 198, says: "At the end of a year a comparison of the discharge from the rectum and from the bladder for twenty-four hours gave the following results: vesical urine, 1,250 cubic centimeters; urea 24 grams per liter. Liquid material eliminated by the rectum, 270 cubic centimeters; urea, 4.5 grams per liter. The patient has three liquid movements daily which contain solid matter in suspension. These passages are easily retained in the rectum, and there is no discomfort experienced. The left kidney is not enlarged, and the amount of urine excreted is not abundant. The diminution in the amount of urea in the urine of this side is explained by the fact that secondary changes had occurred in the kidney as a result of the contraction of the orifice of the ureter during the existence of the fistula."

On Nov. 25, 1892, Chaput again implanted the ureter into the rectum for chronic inflammatory thickening of the bladder. Three months after the

operation the general condition of the patient was fairly good. There were but four or five passages daily. The anastomosis of the right ureter with the cecum was decided upon, and this operation was performed on the first of March, 1893, or about three months after the implantation of the left ureter. In this case the ureter was as large as the thumb and its walls were thickened and congested. No fever followed the operation, but the patient became comatose and died on the same day, which confirmed the conclusion arrived at by the writer in his experimental work, that the implantation of one ureter was comparatively free from danger but the implantation of both was a hazardous operation. Chaput "concludes as a result of this observation that this form of anastomosis is a favorable one, since, notwithstanding the adverse conditions, the operation itself was successful and was free from unfavorable complications either on the side of the kidney or on the side of the intestine. The frequency of the discharges from the rectum, which decreased toward the last, is to be attributed to the polyuria existing in a kidney already diseased. It is fair to assume that eventually the large intestine would have become sufficiently dilated to act as a reservoir for the urine, and so render the evacuations less frequent."

After briefly reviewing the progress made in the last few years in the surgery of the ureter, we are led without further light, to the following legitimate conclusions:

1. That where it is possible, a traumatism of the ureter should be repaired by a plastic operation which has for its object the union of the distal and proximal ends of the ureter.

2. Where it is possible to reach the superior portion of the bladder it is advisable to implant the distal end of the ureter into the bladder.

3. Where it is impossible to either unite the distal or proximal end or implant the distal end into the bladder, we would advise, as a matter of choice, the implantation of the ureter into the alimentary canal, rather than into the vagina or the making of a fistulous opening through the skin.

150 East Broad Street.

SOME POINTS IN THE SURGERY OF THE URETERS.

BY WELLER VAN HOOK, A.B., M.D.
CHICAGO.

An interesting work on ureteral surgery[1] has recently been published in Paris. The author devotes his entire attention to anatomy; to the methods of exposing the ureter for surgical treatment; to ureterotomy for removal of calculi and for the relief of stenosis, and to resection. Inasmuch as he omits the consideration of such important branches of the subject as diagnosis, the use of catheterization of the ureters for various purposes and the implantation of the ureters upon the skin, into the intestinal tract and into the bladder, his work must be regarded as a valuable and timely discussion of the topic touched upon, but not as the systematic treatise upon the general subject of surgical ureteral diseases which the title and the size of the volume lead one to expect.

The position assumed by the present writer upon a former occasion[2] in reference to the subjects of suturing longitudinal wounds of the ureter and of union of that duct after transverse division, have been adversely criticised, although Dr. Glantenay agrees in the main with his conclusions upon other topics.

In that article it was shown that unsutured longitudinal wounds of the ureter must heal by granulation, inasmuch as the continual passage of the urine out of the wound would suffice to prevent the accurate coaptation of the edges of the duct necessary to *prima intentio*. Provision for the free escape of urine by drainage being presupposed, the abundant connective tissue in the neighborhood of the tube must soon be covered by granulations, to which the duct will speedily become attached. The wound edges will then be in position to favor their epidermization, and as no more than normal resistance will be offered to the outflow of urine by the bladder, the discharge of the fluid will soon take place by the natural passages instead of through the drainage tract after the drainage tube is removed. Since the mucous membrane strongly tends, during the time the wound is open, to proliferate over the granulations extending from their edges toward the drainage tract, the lumen of the tube after healing has occurred will be, if altered at all, greater at the site of injury, just as the urethra, after external urethrotomy for stricture, has a greater caliber at the site of the longitudinal incision. The advantage of surgically utilizing this mode of repair lies in the fact that if scar contraction take place after such healing, it must bring about a shortening of the rube rather than a diminution of its caliber.

Dr. Glantenay holds that we should, as far as possible, adopt the suture in dealing with these wounds. There are several manifest objections, however, to the application of sutures to longitudinal wounds. The first of these is that the tube is so small and delicate and its situation often so difficult of access that the operation will usually be trying and unsatisfactory. The record of Tuffier's experiments is sufficient proof of this fact, if demonstration be required.

A second objection is that the needle is liable to penetrate the mucosa of the tube in the course of the application of a number of sutures, and to leave fastened in its lumen a thread upon which calculous deposits may form. Should suppuration occur from previous infection of the urine, or from contamination at the time of operation, the presence of sutures would be worse than useless, since they would act as foreign bodies, keeping up a purulent discharge, and would also act as centers for the deposit of urinary salts.

Beside these objections the sutures must inevitably produce an immediate coarctation of the tube, seeing that they can only close the wound by making tangential traction upon its walls.

Dr. Glantenay has collected fifteen cases of longitudinal incisions in the ureter, of which five were sutured with silk, the remainder being allowed to heal without stitches. Of the five patients in whose cases sutures were placed one died. Of the remainder, one had a persistent fistula. One patient died, among the ten treated without suture. Of the nine which recovered under this treatment, three had temporary fistulæ, a fact scarcely worth mentioning, since the very statement that sutures were not applied would lead us to expect a temporary discharge of urine by

[1] Chirurgie de L'Uretère, par le Docteur Glantenay, Paris. J. B. Balliere et Fils, 8 vo. pp. 291, 1895.

[2] JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. The Surgery of the Ureters, Dec. 16, 1893, et. seq.

the drainage tract. One case is also recorded in the table with the remark, "guérison, fistule?" Obviously, the number of cases thus far reported is too small for statistical study, yet one is irresistibly impressed with the favorable results in the cases in which sutures were not applied. So that Dr. Glantenay's arguments are in a measure, actually confuted by his own statistics.

The rare longitudinal wounds of the aseptic ureter occurring in the course of transperitoneal operations must be disposed of by suture, if possible. But if the duct is not readily accessible for this purpose, drainage through a posterior incision may be required.

Certainly we have much to learn on the subject of longitudinal wounds of the ureter: but our knowledge can now be advanced by clinical experience alone. Meantime we should be careful to properly estimate the value of the materials already at hand.

Dr. Konrad Buedinger[3] has recently discussed complete transverse injuries of the ureter, detailing the methods of Poggi and of the present writer for the reunion of the duct after such traumatisms. Dr. Buedinger tried the method of Poggi upon a dog. This method, it will be remembered, consists in the end-in-end invagination of the upper ureteral fragment into the lower. To do this by means of a traction suture was found so difficult that he gave up the effort. For, in the first place, the invagination would not succeed, since the upper end always slipped out of the lower end as soon as peristaltic action occurred, and, in the second place, the ureter was stretched too much transversely. Becoming discouraged with Poggi's method, Buedinger gave up experiments in this line. If he had tried the writer's method by lateral implantation of the upper end of the ureter into a slit in the lower portion of the tube, these objections would have disappeared.

Glantenay describes the writer's method so fully and clearly that he evidently understands it, but at last discards the procedure utterly, evidently influenced by the paper of Buedinger, since he mentions no experience of his own. His sole objection to the method lies in the fear that the invagination suture (by which the upper end of the ureter is drawn into the slit in the side of the lower portion) may be left in the ureter and may form a nidus for the formation of a concretion. This theoretical objection is wholly refuted by the fact that this suture does not need to pass through the mucosa of the upper fragment, the muscular and connective tissue layers of the duct being thick and strong enough to give substantial hold for the thread. It must also be remembered that the catgut suture would at first be likely to bury itself by cutting deeper and deeper into the walls of the ureter, and later on would be absorbed completely.

Glantenay coolly states that the case operated upon by the writer's method by Dr. H. A. Kelly, "does not seem rigorously demonstrative. If it proves the harmlessness of the maneuvers which this complex procedure necessitates, its efficacy is not evident to us, for where is the proof of the reëstablishment of the course of the urine by the injured ureter?"

The child-like naïveté of this inquiry almost disarms one. Yet perhaps we should take him seriously, especially as he complains that he could not find the detailed report of the case, a statement which would seem to imply that he did not have access to the *Index Medicus* and the *Annals of Surgery* even in Paris. The proof which he desires lies in the following facts: 1, no urine escaped through the abdominal drain leading down to the site of injury; 2, no accumulation of urine in the peritoneum or symptoms of resorption were noted; 3, a normal quantity of urine was passed and no symptoms of ureteral obstruction occurred.

It may be added that Dr. Doherty of Georgia, has sent the writer a very brief account of a similar case, in which he accidentally cut the ureter across during a laparotomy and immediately closed the injured duct by the same method. His patient recovered without an untoward symptom.

103 State Street.

[3] Archiv. für Klinische Chirurgie Bd. XLVIII, H. 3.

THE INFILTRATION METHOD OF ANESTHESIA IN OPHTHALMIC PRACTICE.

Read in the Section on Ophthalmology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY H. V. WÜRDEMANN, M.D.

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MILWAUKEE, WIS.

Just six months ago we brought to the notice of the medical profession our[1] conclusions obtained by following out the line of experiments instituted but a few months before by Schleich,[2] of Berlin, relative to the anesthetic properties of water, and its application in surgical practice. The experimental stage has been passed and we are now able to substantiate some of his statements made in our first article which at that time were not yet proved.

A brief resumé of Schleich's experiments may be advisable: this investigator was employed in research for the production of a better and less harmful method of local anesthesia than that which has hitherto obtained. He first experimented with hypodermatic injections of cocain and other drugs, finding that a 2 per cent. solution of cocain was the weakest which would produce anesthesia when introduced beneath the skin. A couple of syringefuls of this solution would be the toxic dose and such an amount would be necessary in many trivial operations. It is well known that cocain injection is dangerous to life and even small quantities of the drug may give rise to very unpleasant symptoms.

Our investigator discovered that by injecting the solution into but not under the skin in the surprisingly small quantity of .002 to 1.00, a practical anesthesia would result throughout the whole thickness of the skin and insensibility more profound than that by hypodermatic injection of a solution one hundred times this strength could be obtained. The logical deduction followed that the drug itself could not be the main agent in causing the anesthesia. Injections of distilled water were tried and produced anesthesia but these were painful, *i. e.*, the infiltration of the water into the skin produced a burning pain which transcended that of the knife. Complete anesthesia, however, followed the infiltration.

Could it be the infiltration alone that produced the pain of injection and later obtunded the sensibil-

[1] "Explanation and Demonstration of the Infiltration Method of Anesthesia." JOURNAL AMERICAN MEDICAL ASSOCIATION, Dec. 29, 1894.
[2] Schleich, "Schmerlose Operationen," Berlin, 1894.

ity? Injections of the normal salt solution (.6 per cent.) were made but no anesthesia followed, yet the injection itself was painless. The proposition to be solved then was as follows: if infiltration of water alone into the tissues produced pain followed by complete anesthesia, while the injection of .6 per cent. sodium chlorid was painless but made no alteration in the sensibility of the nerve ends, there must be between these two extremes a salt solution of a certain strength which would at the same time be so similar to the normal fluid of the blood as to cause little or no pain in infiltration and yet be sufficiently like water to produce anesthesia of the parts so injected. Experiments proved that a .2 per cent. salt solution met these requirements. Solutions above or below these strengths were either painful to inject or produced no anesthesia. Operations may be painlessly done by a .2 per cent. salt solution. I have personally experimented with various fluids: the ethers and alcohols are similar to water in that they cause burning pain on injection, followed later by anesthesia. Ether, however, produces capillary hemorrhage and alcohol coagulates the albumin of the tissues and both substances, aside from this, are too irritative to be of use in this method. The various oils are not painful to inject but afford no anesthesia. They are usually absorbed without producing material change in the tissues.

Cocain .2 per cent., morphin .2 per cent., ac. carbol .2 per cent., bromid of potassium 3 per cent., methyl violet 1 per cent., caffein 2 per cent., sugar 3 per cent., and other substances in aqueous solution were found to allow of the anesthetic action of water upon the nerve filaments. The anesthetic drugs, cocain, ac. carbol. and morphin have a special characteristic: *i. e.*, their addition in very small quantities to the .2 per cent. salt solution prevented the paresthesia incident to injection of simple saline solution and the infiltration of inflamed or hyperesthetic areas could be made without pain.

The narcotics were more active when used in the .2 per cent. salt solution and could be used in even lower attenuations, for instance, .01 per cent. cocain in a .2 per cent. salt solution prevented paresthesia. It was also found that if the solutions were used cold, their efficacy was increased many fold, and that when used at the temperature of the body, little or no anesthesia followed.

The following formulas are advocated by Schleich:[3]

R	Cocain mur	.20
	Morph. mur	.025
	Natr. chlor	.20
	Aqu. dest. ad	100
M.	Sterilisat. adde. sol. ac. carbol. 5 per cent. gtt ij.	
S.	Solution No. 1, strong. For operation upon highly inflamed or hyperesthetic areas.	

R	Cocain mur	.10
	Morph. mur	.025
	Natr. chlor	.20
	Aqu. dest. ad	100
M.	Sterilisat. adde. ac. carbol. 5 per cent. gtt ij.	
S.	Solution No. 2, medium. For most operations.	

R	Cocain mur	.01
	Morph. mur	.005
	Natr. chlor	.20
	Aqu. dest. ad	100
M.	Sterilisat. adde. sol. ac. carbol. 5 per cent. gtt ij.	
S.	Solution No. 3, weak. For superficial operations upon nearly normal tissues.	

[3] The "keeping" qualities of these solutions are improved by the addition of a few drops (gtt jjj) of a 5 per cent. solution of trikresol as recommended by Parke, Davis & Co.

At my request, Parke, Davis & Co., of Detroit, Mich., have prepared tablets, triturates and compressed tablets from which these solutions may be extemporaneously made by dissolving one tablet in 100 cubic centimeters (℥iij) of distilled or boiled water. These will be found convenient in practice.

All are to be kept strictly sterile; glass stoppers or scorched cotton such as are used in bacteriologic experiments for the bottles; small quantities to be poured out in smaller vessels for each operation. Just before operation the solution should be cooled by laying the bottle containing it on ice. The common form of hypodermatic syringe with the finest of needles is all that is usually needed. Dr. Chas. Denison of Denver, Colo., has given us an aseptible syringe of larger capacity, with piston packing of asbestos which is particularly applicable for aseptic injection. The syringe is kept in good order by being frequently soaked in a 5 per cent. carbolic solution and the needle sterilized after each operation.

The discovery of these truths so valuable for the question of local anesthesia is due simply to a slight change of method; the application of the solution within and not under the skin. The anesthesia is caused by the replacement of the normal fluids of the tissues by a fluid of less specific gravity (the water) which causes anemia, compression and cool-

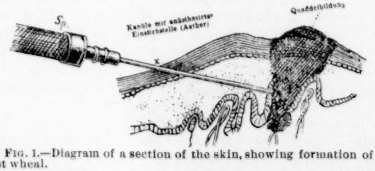

FIG. 1.—Diagram of a section of the skin, showing formation of the first wheal.

ing, producing thereby a temporary paralysis of the nerve filaments. The pain of the infiltration of indifferent solutions is abolished by the minute doses of narcotic drugs, (morph. cocain, carb. ac.).

It is perhaps well to here go into the technique of the production of local anesthesia by this method. The field of operation is made aseptic in the usual manner. Having the required formula, the solution aseptic and cold, we fill the sterilized hypodermic syringe; pinching the skin slightly between the thumb and forefinger of the left hand; the needle is then passed obliquely under the epidermis to the papillæ, intra-cutaneously, until the lumen is fully inserted. A few drops are then injected, thereby producing a white elevated wheal, the infiltration extending throughout the whole thickness of the skin. (See Fig. 1.) There is immediate and complete anesthesia throughout the extent of the infiltration which lasts from ten to twenty minutes according to the density of the tissue so edematized. The needle is then reinserted at the periphery of the wheal and the area infiltrated to the required extent and depth. No tissue offers any deviation from the dictum: every structure is made anesthetic that can be artificially edematized; this holds good for skin, mucous and synovial membrane, periosteum, fascia, muscle, lymph glands, nerves, viscera, and even bone.

Anesthesia exists only within the area infiltrated by the solution and outside of that, normal sensation remains. In operations or through the skin and mucous membranes the first wheal is increased to the size of a dime by increased pressure on the piston;

the needle is moved and re-inserted at the periphery of the wheal, but still within it, and a new wheal raised. In this way the line of incision is marked out to any desired length or breadth. (See Fig. 2.) In general surgical operations we would then infiltrate the underlying tissues, by slowly pushing in the needle and injecting a few drops at a time until the deeper tissue is edematized.

By cooling the spot selected for the formation of the first wheal by ether or rhigolene spray, or on mucous membranes by touching the spot with a strong solution of carbolic acid or applying cocain, the first injection may be made, if so desired, without even feeling the prick of the needle. This is seldom necessary as a very fine needle may be inserted without pain even in very tender tissues such as the eyelids. The succeeding injections may now be made without causing sensation. There is no sensation to the infiltration proper.

Where the tissues are inflamed the sensibility is pathologically increased. Here it is indispensable

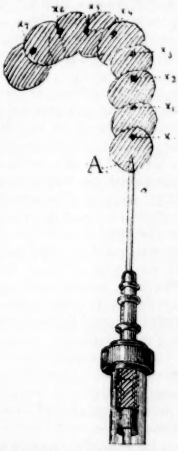

FIG. 2.—Formation of the cutaneous wheals. A, spot made anesthetic by ether spray for the first injection.

that the infiltration be begun in sound tissue and carried over into the part to be operated upon. (See Figs. 3–4.) The dilated blood and lymph channels of the inflamed skin allow us to anesthetize quite a large spot from one puncture.

The injection should be done slowly at first and when the infiltration is only felt by its tension we may rapidly flood the part to the required extent. Under no circumstances must fluid be primarily injected into an abscess, an exudation or a pathologic focus. The only result is increased tension and pain. We must not lose sight of the cardinal fact that the anesthesia exists only within the area infiltrated by these solutions and that outside of that there is normal sensation. The method rests principally on the production of a complete artificial edema of the tissues. Wherever we wish to operate with exact anesthesia, the field of operation must be tensely filled with the solution so that it exudes from the cut surface.

It should be remembered that our use of attenuated solutions of the narcotic drugs has nothing akin to the doctrine of the followers of the dogma "*similia similibus*," etc. These statements may be readily substantiated upon your own persons, as I have done many times on myself and other physicians. I need not call to your attention the well-known dangers of chloroform and ether anesthesia and the waste of the surgeon's time, the discomfort to the patient, and the necessity for skilled assistance. Cocain injection of the solutions of the usual strengths (5 to 10 per cent.) is certainly far more dangerous to life than the administration of chloroform. The higher solutions of cocain surely diminish the exudative process and retard the healing and, in some cases, actually destroy the trophic filaments so that gangrene has been known to occur. Nothing of the sort has been found to result from the infiltration of the solutions recommended in this article. Anesthesia is complete and occurs immediately and lasts long enough for almost any external operation. There is no objection at any time to repeating the injection if feeling should return during the operation. Indeed, we might safely operate for hours upon a small area if so inclined. The advantages of the method are also evident from its simplicity, safeness and celerity.

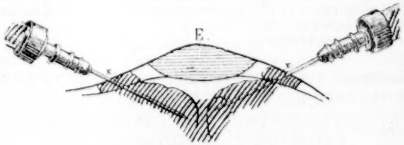

FIG. 3.—Infiltration of inflamed surfaces.

FIG. 4.—Infiltration of abscess.

The method has gained credence and is now in common use by many busy practitioners. Operations have been done, from the removal of ovarian tumors and amputations down to the opening of boils without pain, and with satisfaction both to the physician and patient. I have personally done half a hundred operations upon the eyelids, etc., by this form of anesthesia, as well as various operations upon other parts of the body while prosecuting the investigation. My first operation was done upon a deep seated felon. I have assisted at a number of circumcisions, excisions of tumors, and minor operations, making the injections myself; I have had reports from many surgeons in different portions of the United States of its use for operations varying in severity from ingrowing toe-nail to hernia, in which the anesthesia has been satisfactory. Healing has been by first intention and in only three instances have we had reports in which it has been delayed.[4]

In the foregoing, I have purposely said little about its use in ophthalmic practice, leaving this to be inferred from what I have said concerning minor surgical procedures in other localities. Indeed, infiltration anesthesia is of greater value to the general

[4] In one of these, an operation for removal of tumor in axilla, the patient used the arm freely after the operation. In the other two, the patients were scrofulous and healing would have probably followed the same course if a general anesthetic had been given.

practitioner and surgeon than to the oculist, as the instillation of cocain into the eye is sufficient for most of our operations. For obvious reasons this method is applicable only to operations in our practice upon the eyelids, etc. The resultant edema would interfere with most operations within the orbit such as enucleation.

However, I bring the subject to workers in ophthalmic surgery, believing it will be an advantage to the ophthalmic surgeon for most operations in which instillation of cocain is inapplicable, but which may be deemed too trivial for a general anesthetic and yet are attended with considerable pain. In my practice it is in daily use for chalazia, tarsal tumors, opening of abscesses and plastic operations. For most office operations the Schleich method is an invaluable contribution to our therapeutics. It should do away with the injection of dangerous solutions of cocain and take the place of general anesthesia for many operations.

The technique of the injection was then shown upon the arm of one of the ophthalmologists there present after which by the kindness of Dr. Harry Friedenwald, of Baltimore, a patient was shown with two sebaceous cysts of the forehead. Dr. Würdemann injected the skin covering of this tumor with solution No. 1 and the growths were dissected out by a surgeon, without the patient experiencing the slightest pain or feeling either the injection or the operation. Six stitches had to be taken in the wound of the larger, and two in that of the smaller growth.

805 Grand Avenue.

REPORT OF COMMITTEE ON EXAMINATION AND CARE OF EYES DURING SCHOOL LIFE—INSTRUCTION OF TEACHERS AND SCHOOL AUTHORITIES AND LEGAL PROVISIONS.

Read in the Section on Ophthalmology at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

B. ALEX. RANDALL, CHAIRMAN.

PHILADELPHIA, PA.

Mr. Chairman and Gentlemen:—Your Committee in approaching the subject assigned to them, find themselves of one mind in advocating advance in this important field of preventive medicine; but can less easily concur upon the exact lines within which they deem it practicable to advise action at the present time. Located in cities of various sizes and widely separated portions of the country, the environment of each member must react distinctly upon his view of what it is judicious to attempt, for it is practically self-evident that the popular mind is but little prepared for any active steps in the matter, and that it will be very unwise to take a position too advanced to secure the indorsement of reasonable men, medical and lay. Public opinion alone can carry this project through; and even in the profession—nay, even among our ophthalmic colleagues—this opinion has still largely to be shaped. Our steps must be guarded, therefore; yet they need not be timid nor indecisive. We must form the advance guard, sure that the rank and file will lag behind the standard which we place before them, however wisely chosen. Let us look, then, not for our idea of the maximum now everywhere practicable, but rather for the minimum that can be held efficient and satisfactory.

The opposition likely to be encountered in our efforts to advance the cause will come primarily, perhaps, from professional jealousy rather than from school inertia or individual restiveness and assertion of freedom. That too many men intrusted with such investigations may try to coin profit to themselves from them, must be conceded; yet we contend that still more men of the first rank will refuse, or will hesitate to accept, such a trust because of the unworthy motives likely to be gratuitously imputed to them. In our noble profession there are hundreds capable and willing to take up this or any other self-sacrificing task with no thought of personal exploitation—finding their sole rewards in the knowledge thus gained and the beneficent work accomplished. There may be exceptions among those who have already wrought in this field; but we know of none. Yet any one of us in offering to do such work in his own community gratuitously, much more if claiming compensation, would be very careful to whom he broached his proposition, knowing how probably he would be misconstrued.

Let us deal frankly and fairly with this matter, individually leaving its execution wholly alone, if we have not the interest or can not afford to undertake it without more compensation than is likely to be given—and leave others unhampered by any insinuation of baser motives in being willing to carry forward the needed work.

The next line of obstruction is to be found in the school authorities. The cramming process now in vogue demands more time than can be found; so they will grudge every minute that is given to medical examinations. Ill-paid as are most of our teachers, they will at times demur to taking more work on their shoulders, or that any of the scanty school funds should be diverted to paying medical examiners. School discipline is apt to suffer in being broken in upon by such investigations: and some will fear, like the parents, lest we "put notions in the children's heads." An officially constituted group of "lame ducks" for whom forward seats, special illumination or lightened burdens would be required, is an incubus from which some would gladly escape.

Yet it is but just to another noble and valuable class in our midst to insist that the great majority of teachers will cheerfully, if not enthusiastically, hail the promise of better ocular hygiene for their pupils and make any reasonable sacrifice to do or to permit the good work. As a body they will welcome any system which will enable them to do all they can to obviate or relieve danger to their little charges. This spirit should be fostered; and they should be given test-cards and taught how to use them and make other examinations within their scope; for much—all that is possible for some localities, perhaps—can be thus done through the agency of the teachers.

The scholars and their elders will occasionally offer opposition, regarding such examinations as invasions of their liberties. This will rarely occur unless provoked by some indiscretion or arbitrary order of the examiner or school authorities. Yet it can be avoided only by the most scrupulous bearing on the part of the investigator, not only in setting such a study on foot, but even when it is apparently progressing most favorably. An unwilling pupil may be gently ridiculed and passed over until in better frame of mind; any coercion is likely to prove disastrous in these delicate positions. The examiner should even be very cautious as to any leading questions and very chary of remarks as to his findings, generally declining to report in any but the official form. This had

better be in a concise untechnical statement to the school authorities of the vision of each eye, the character of any refraction error and, in the needful cases, that medical aid should be promptly sought, leaving them to transmit it to the parents. Unless officially charged with such a duty, the examiner will be wise to refrain from all prescribing.

When an examination has been authorized, how, where, and by whom shall it be made? We may look forward with hope to a time, not probably in this century, when the new pupils will present themselves for examination, physical as well as mental, before the school opens in which they desire to be enrolled. For the present, we will do well if we secure the investigation of those accepted and beginning their school work. For the examination of these, suitable accommodations at the school itself should be perfectly practicable; and with the needful appliances duly arranged, the study can there be made with the minimum cost of time to examiner and scholar.

Many of the medical examinations thus far made could have been as well, if not better done, by an intelligent layman. Little practice is needed to fit one to measure the acuity of vision. The prime requisite in this and other tests, is the conscientious carrying out of the routine; and in this medical examiners may be as faulty as laymen. So too as to the choice of astigmatic lines, the testing of the color-sense and even taking the range of accommodation. Pennsylvania railroad clerks do this very efficiently under the system devised by Dr. Thomson. Tests of the refraction with spherical glasses and of the muscles with prisms are rather beyond most laymen, as indeed beyond most non-expert physicians. Ophthalmoscopy and ophthalmometry demand the highest skill of the oculist.

What then shall we attempt? Shall we test vision at four feet and seek H. with a +1 lens and then set down as emmetropic and normal, all not thus proved ametropic? Such a piece of work by one ranking as an authority, is probably more quoted than any other study yet made. As well record as all-sufficient, statements of the pupils themselves! Thus much the teachers will probably do more patiently than a physician.

Every simple means of learning the real and important conditions of the eyes should be utilized; since no single examination can possibly be infallible, and we might easily fail to learn the most fundamental facts if we slur our work at all. A study as complete as we give to a puzzling case in private is none too elaborate; for we ought to test the color-sense as well as the vision for far and near, the muscle relations and the accommodation, and determine the refraction and eye-ground conditions. Field-taking can generally be omitted; and, although well used in some of these studies, ophthalmometric measurement of the cornea may be more scientific than practical.

Possession of normal visual sharpness does not at all assure present comfortable use nor future safety, any more than defect of distant vision proves myopia. We must know as accurately as possible what is the refraction, and test the power of the external muscles and of the accommodation, in order to know how the vision is attained and what are its chances of being maintained. Nor will this suffice; for health of the intra-ocular tunics is essential for good function; and we waste one of our best means of forestalling danger if we ignore the ophthalmoscopic showing as to the eye-ground. Probably we can do no better than follow the scheme used by Risley in the Philadelphia schools fifteen years ago, slightly modified by Randall and employed in his work at the University of Pennsylvania and in the William Penn Charter School, as reported to this Section in 1892. Part of the work can be done by assistants, who need not be medical, just as the employes of the railroad are examined by clerks in the superintendent's office under Dr. Thomson's plan; the methods and results being under the control of the examiner-in-chief, who can largely confine his labors to the strictly expert procedures. Making and recording all the steps himself; the ophthalmologist can easily study from a dozen to twenty scholars in an hour—and division of labor can double the number. Hence two hours a day for a month or two, would suffice for the examination of a thousand pupils, at only such cost of time and effort as most of us habitually give to our clinics.

While few of us may feel moved to inaugurate such studies, in which we should be unhonored laborers and the targets of unfriendly criticism, many would feel in duty bound to consider, and probably accede to, a request from the constituted authorities to undertake such work, even though no honorarium were attached. Many a study has been thus made in the interest of ocular hygiene; and we must look to this as a needful course in many instances in the future, before this matter is placed upon its proper footing. There is evident limit, however, to the possibility and desirability of this; and equity demands that compensation, in small amount at least, should be offered in acknowledgment of the service. This can not often be made more than a mere honorarium, which may induce the best men to accept the duty and thus exclude the unscrupulous, who would try to profit illegitimately by these appointments. One hundred dollars for each thousand examinations made, should be well within the financial possibilities of the school authorities and yet a fee not unworthy of acceptance for a month or two of public work. It would bring an expense of $12,000 to $15,000 to Philadelphia annually; but that is little more than Boston is now paying for medical inspection of her schools, merely to guard against infectious diseases, with such a study as we have outlined only in the dim background of the future. Like the vaccine physician and other sanitary workers, the school physician must expect but nominal remuneration, especially while trying to convince the public of his disinterested motives in advocating examinations of the eyes in the schools.

The details of the examination should be recorded on forms spaced for record of the date, school and class; the name, age and sex of the pupil; the report as to the general health as well as that of the eyes, with note of objective evidences of inflammation of lids, conjunctiva, cornea or tear-passages, squint, photophobia, etc.; the visual acuity (stating test and illumination, when unusual), and choice of astigmatic lines at a distance and the near point of accommodation (with far point when limited); the muscle balance by Maddox rod for distance and Graefe test or pen point for near; the color sense by Holmgren's worsteds for each eye; the refraction by retinoscopy and direct ophthalmoscopy, with note of the eye-ground conditions, elaborated perhaps by lens

tests with sphericals in fixed series for retinoscopy and manifest measurements. To this we should add mensuration of length of leg, thigh, back and elbow height in relation to proper seating.

B. ALEX. RANDALL, Philadelphia, Chairman,
W. F. SOUTHARD, San Francisco,
H. B. YOUNG, Burlington,
A. R. BAKER, Cleveland,
G. H. PRICE, Nashville,
Committee.

THE IMPORTANCE OF MINOR CHOROIDITIC CHANGES, ESPECIALLY CONUS.

Read in the Section on Ophthalmology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY B. ALEX. RANDALL, M.D.
PHILADELPHIA, PA.

Among the hundreds of thousands of eyes that have been examined more or less carefully in the schools as to their refraction, but a few thousand have been even looked at with the ophthalmoscope; and only a few hundred studied with reference to the pathologic changes in the eye-grounds. Search for the causative factors in the production and increase of axial distension has led to great elaboration of many phases of the subject; yet this really fundamental one has been commonly neglected. Loring and Derby, Koppe, Scheiding and a few other investigators have recorded the frequency of conus, and Paulsen has also noted its direction in seafaring men, to learn if their frequent upward gaze made them specially prone to conus downward. But few have studied, like Risley and myself, the general normal or unhealthy condition of the fundus in its bearing upon changes of the refraction in actual progress.

This matter in its relation to general ophthalmic practice as well as in school examinations, is worthy of far better attention. In the routine recording of almost every case, the condition of the nerve margins, the macula and the general eye-ground should receive careful scrutiny and record. I have heard this laborious detail on the part of some Philadelphia men strongly criticised as superfluous by men trained in the best foreign clinics and returning to instruct their countrymen. If Hirschberg, Landolt, Fuchs, Nettleship and others do this only in exceptional cases, why should we do otherwise? Another question may serve as answer. When the ophthalmic world regards myopia as a condition commonly, nay usually, progressive, why are progressive cases rare in the practice of these over-minute Americans?

That the macular region should habitually be closely studied, few will question; although some of the journal articles about it seem akin to old ophthalmoscopic hand-book statements that "some observers *claim* to have seen the macula in life."

The facility, if not indeed the practicability of such study is less to those who make little use of mydriatics or who accept failure in such scrutiny before they have even attempted it. Those who practice it whenever at all possible, will be well rewarded. Not only will many cases of renal disease be thus detected long before the usual symptoms have attracted attention; but many peculiar minor lesions will be noted, of which the meaning is not yet so clearly understood. Yet lesions in this region of supreme importance can not be too early or carefully investigated. Hirschberg asserted not long since that the majority of senile eyes showed gross alterations at the posterior pole in a way that suggested that he had not long been as familiar as he should have been with these lesions, nor examined enough eyes carefully to have learned how many are totally free from them.

As to the "conus" and crescent formation at the nerve margin, much as has been done and written for its elucidation, there is great need for farther and better study. Little advance has been made since von Jaeger's investigations a quarter-century ago, although many a backward step has been taken, which has complicated the matter for later students. Some deny, like Stilling, that there is an inflammatory element in its causation; regarding the white crescent more or less exposed, as a glimpse into the distended nerve sheath. Yet daily observation teaches us that this is rarely true, and that the common changes at the nerve-margin have no *certain* relation to the distended nerve sheath and other gross posterior alterations. We have most of us seen these crescents appear as orange-red areas where there was little pigment-heaping to obscure the process; and, perhaps have seen them disappear with quite the same rapidity. Those who have failed to make verbal or pictorial note of this, have doubtless distrusted their observations; for hardly any one has written about it. More often the change has been in the absorption of the pigment ring, both at the outer and inner margin; and this becomes broken, gray, double-ridged, then semi-atrophic and before the cycle is completed by its full atrophy and uncovering of the sclera, the process is being repeated in one or more crescents beyond the first. Three and sometimes four of these crescents will be seen in one eye, revealing at one glance the steps of the change; the outermost being fairly recent and perhaps still amenable, like any other choroiditic patch, to treatment by mydriatic rest and alteratives. That they are generally of inflammatory nature can be doubted by few close observers; too often they have passed unstudied if not noted, and their significance has been lost sight of. At the inner margin, the double-ridged gray crescent is regarded by Nagel as a *supra-traction* of the choroid, such as v. Jaeger described and drew in his "*Einstellungen*," and Weiss has demonstrated in myopic eyes. This is quite clearly the case in a few instances, and the curvilinear nasal reflex of Weiss, to which I have several times called attention, is present to show the distorted prominence of the locality. Yet any one who will sketch a few thousand eye-grounds will find his portfolio, like mine, more stocked with exceptions than instances of most these ill-grounded theories.

Transparent as is the normal retina, its fibers are usually visible to close study along the larger vessels above and below the disk; while weak illumination will make still other of its structures apparent around the margin. The increase of this opacity is very marked in some cases of retinitis; but short of this, we may have many undefined grades of haze which belong, like the exaggerated striation, to conditions better termed irritative than inflammatory. This phrase should not imply that they are not due to true low-grade inflammation. It marks in the usage of some men, that they have little tendency to progress into the serious infiltrated and extravasating lesions which we commonly associate with the name retinitis. Usually accompanying the minor retinal

alterations are parallel changes in the choroid, due to little more perhaps than hyperemia, yet generally quite recognizable. The delicate stipple of the retinal pigment layer is lost in the fluffier appearance that Risley has well likened to canton flannel. Let this long persist unrelieved, and absorption will become evident, which lays bare the larger choroidal vessels and heaps the pigment in their interspaces. Most juvenile eyes, even in brunettes, show in the periphery some uncovering of the choroidal circulation; and in blondes this almost attains the albino type. But it is quite another thing to find visibility of the vessels of the choroid near the disk; and clouds of pigment heaping in the stroma between them, mark the pathologic nature of the process. There should be as little question as to the meaning of the picture, in these commonly ignored cases, as in those where it forms part of most serious processes.

The apparent vascularity of the nerve-head has wide variations within normal limits; depending largely upon the size and depth of the central excavation, the visibility of the scleral ring, the size of the pupil and even the refraction. One can at times see his own optic disk flush under the irritation of prolonged autophthalmoscopy, and realize that similar fleeting variations are often presented to his study. With any persistent hyperemia, there is apt to be a visible distension of the lymph sheaths surrounding the retinal vessels and pulsation, often very striking, in the large retinal veins. No single feature of this may be beyond possibly physiologic limits, yet the complex is one that should be unmistakable to the careful ophthalmoscopist. Slight tortuosity of the smaller vessels may be indistinguishable from their normal sinuous course; but this aberration can not seldom be actually followed through every stage up to that of marked neuro-retinitis, in cases where eye-strain from refraction error seems the only assignable cause. The configuration of the disk, with the form of its *porus* and the trend of the vessels on and near it and the other features of what Thomson has termed "drag," also deserve distinct note, as furnishing evidence that the tissues near the pole are actually undergoing the plastic changes for which the hyperemic softening has prepared them.

Minute observation and note of the conditions of margins and excavation of the nerve, the trend of the vessels, the absorption of the choroid ring and the general hyperemia and pigment disturbance of the eye-ground, repeated at intervals, will generally demonstrate progressive changes about the posterior pole and serve to explain why the patient suffers so much asthenopia in the process. Sketches, however rude, can give accurate portrayal of the proportions of disk, vessels, *porus*, crescent, etc., and serve better than any verbal note to make evident the changes from time to time. And this not only in eyes progressively myopic or other cases of changing refraction, but in a few where the hypermetropic refraction remains unaltered. And in the cases of progressive myopia, a group to which Risley has called attention, will be brought more clearly forward, in which no alterations appear at the posterior pole to indicate staphyloma there, while the marked choroiditic disturbances at the equator mark this as the site of the stretching which is lengthening the optic axis.

1806 Chestnut Street.

A STUDY OF THE REFRACTION OF SEVENTEEN HUNDRED EYES.

Read in the Section on Ophthalmology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY H. BERT. ELLIS, M.D.
LOS ANGELES, CAL.

The question of refraction is one that plays no unimportant part in the daily work of many oculists in our large cities, and of most oculists in our medium and smaller cities. With many it forms the great bulk of their work.

I present for your consideration to-day, in tabular form, a study of the refraction of 1,700 eyes, representing 869 patients taken from the last 1,000 consecutive eye cases coming under the care of the writer in his private practice. Of the 131 cases not incorporated in this study, some were infants with various inflammatory troubles and some operative cases, five only being presbyopes with emmetropic eyes. Thus you will see that about 87 per cent. of all my eye cases required correction of ametropia. Dr. Geo. M. Gould in a paper on these very lines, read before this Section in 1891 said that 93 per cent. of his eye patients required correction of errors of refraction. If, therefore, from 85 to 95 per cent. of all eyes that come under the oculist's care need errors of refraction corrected, it will be wise for all of us to give the subject some little consideration.

Of the 869 patients whose eyes form the basis of this study, 613, 70 per cent., were females, and 256, about 30 per cent., males, a proportion of nearly 2.5 to 1. The same general laws underlie this disproportion between the sexes in ophthalmologic practice that cause a similar disproportion of males and females in other branches of medical work, *e. g.*, among the women we find less general vigor; less active life, with closer confinement; more constant and finer work in the application of the eyes; and last but not least a more sensitive and high-strung nervous mechanism.

Although 19 per cent. of the patients were presbyopic, no account is taken of the presbyopia in these tables. In 66 per cent. of the patients under 40, a mydriatic was used; ordinarily I employed ophthalmic disks composed of homatropin and cocain, of each 1-50 gr., to produce mydriasis. Where the use of three or four of these disks in each eye within a period of one and a half hours failed to quiet accommodation, I used a few drops of an atropin solution, 4 grs. to the ounce, in each eye four times daily for three days. I have, however, had but few cases in which I have had to resort to this method. I have left out of this study all aphakic eyes, and all eyes in which disease of the refracting media or fundus had impaired refraction. In the preparation of my tables I followed the same general plan adopted by Dr. Gould in his paper of four years ago.

I have in Table 1 given the general refraction of 1,700 eyes; 1,371, or a little over 80 per cent., were hyperopic; 282, 16.59 per cent., myopic; while 47 were myopic in one diameter and hyperopic in the other. Of my hyperopic cases, I found only 16 per cent. with simple hyperopia, 84 per cent. had astigmatism simple or compound, the simple astigmatism amounting to 37 per cent. of all the hypermetropia. Among the myopic patients we find very nearly the same proportion; 17 per cent. of simple myopia, 32

per cent. of simple myopic astigmatism and 51 per cent. of myopia with myopic astigmatism.

Table 2 gives the amount of hyperopic correction in 867 eyes, but does not include the astigmatism. It will be noted that 42 per cent. of the eyes had hyperopia of 0.50 D., or less and 31 per cent. had less than 1.75 D. The eyes having hyperopia combined with astigmatism outnumbered the simple hyperopic eyes more than 3 to 1. Although the table shows so large a number of eyes with small hyperopic errors, it must not be supposed the total error was correspondingly small, because with small amounts of hyperopia, I frequently found large amounts of astigmatism.

Myopia is classified in Table 3. In comparison with the hyperopic table, we find only 31 per cent. of the eyes have errors of 0.50 D. or less, against 42 per cent. of the hyperopic eyes; and 62 per cent. against 81 per cent. with errors less than 1.75 D. On the other hand, it will be seen that over 21 per cent. of the myopic eyes have between 5.50 D. and 22 D. of error, while less than 2 per cent. of the hypermetropic eyes had corresponding errors.

Of the 1,700 eyes whose refraction was measured, 1,434 were astigmatic, but in 47 of these the astigmatism was mixed, and I have consequently given them a table by themselves. The varying amounts of astigmatism in the remaining 1,387 eyes is given in Table 4; 1,158 of the eyes, 83 per cent., had hypermetropic astigmatism. In 72 per cent. of all the astigmatic eyes the error was less than 0.75 D., while 92 per cent. of the eyes had errors less than 1.75 D.; 494 of the eyes had only 0.25 D. of astigmatism, and yet I found it both wise and expedient to correct the greater number of these small errors. As we would naturally expect, we find relatively a large number of small degrees of hyperopic astigmatism, and proportionately large errors of myopic astigmatism; for instance, 20 per cent. of the myopic astigmatic eyes had errors above 2 D., while only 3 per cent. of the hyperopic astigmatic eyes had correspondingly large errors.

The axes of the 1,434 astigmatic eyes are classified in Table 5. I have used the term unsymmetrical, in a somewhat narrow sense and not with its usual significance. In Table 5, unsymmetrical simply means the departure of the axis of any given eye from 90 or 180° without reference to the axis of its fellow, excepting where the axes of the pair is symmetrical. Under axis 90°, I have included every eye having its axis so placed, irrespective of the fact of the fellow eye having no astigmatism, or the axis at 180° or some oblique angle; and, similarly, all axes at 180° are placed together; 55 per cent. of all astigmatic eyes had their axes at 90°, while 25 per cent. had them at 180°, leaving only 20 per cent. with oblique axes. Among the hyperopic astigmatic eyes, 62 per cent. were according to rule at 90°, and 20 per cent. contrary to rule at 180°; while in the myopic table only 51 per cent. are according to rule at 180°, and 24 per cent. against the rule at 90°. The unsymmetrical cases were relatively more numerous among the myopes.

The unsymmetrical axes or those varying from 90° and 180° are grouped in Table 7, and it will be seen that, among the hyperopic eyes, 49 per cent. of the unsymmetrical eyes had their fellow eyes with astigmatism at 90°, and 12 per cent. at 180°; and in the myopic division 9 per cent. had fellow axes at 90°, while 21 per cent. had them at 180°. Of the 201 unsymmetrical eyes, 52 per cent. have the axis of their fellow eye at 90° or 180°. In studying the deviation of the axes from 90° and 180°, I find no definite rule, but simply a tendency of the hyperopic axes to be near 90°; and of the myopic axes to depart but little from the horizontal diameter. For instance, thirty-six of the hyperopic astigmatic eyes had their chief diameter at 75°; twenty-four at 105°; thirteen at 60°, and seventeen at 20°. Seventy per cent. of these hyperopic variations diverged within 30° of the perpendicular diameter on either side. In the myopic variations, six were at 165°; seven at 150°; seven at 15°, and twelve at 30°, while 65 per cent. were within 30° of the horizontal diameter, which is in accord with the ordinary teaching. In Table 5, the axes of all my astigmatic cases were given; but in Table 4, the refraction of forty-seven eyes, the mixed astigmatic cases, was omitted. The refraction of these forty-seven eyes, expressed in terms of crossed cylinders, is given a table by itself. We have, however, no particular lesson to draw from it, or point of interest to call to your attention, excepting a fact, which the table itself does not show, and that is, that it required but weak glasses to make the correction in the greater number of these eyes.

TABLE 1.—GENERAL REFRACTION—1,700 EYES.

	Eyes.	Per cent. of H	Per cent. of all.
Simple hyperopia	218	15.90	12.82
Simple myopic-astigmatism	504	36.76	29.65
Hyperopia plus hyperopic-astigmatism	649	47.34	38.18
	1,371	100.00	80.65
		Per cent. of M.	
Simple myopia	48	17.05	2.82
Simple myopic-astigmatism	89	31.56	5.24
Myopia plus myopic-astigmatism	145	51.41	8.53
	282	100.00	16.59
Mixed astigmatism	47		2.76
	1,700		100.00

TABLE 2.—REFRACTION OF 867 HYPEROPIC EYES, ASTIGMATISM NOT INCLUDED.

0°	H	H Ah	H H and Ah	Eyes.	Per cent. of H	Per cent. of all.
1-4	8	112	120	364	41.98	21.41
1-2	68	176	244			
3-4	31	94	125	239	27.56	14.06
1	35	79	114			
1 1-4	21	32	53	98	11.30	5.76
1 1-2	9	36	45			
1 3-4	7	19	26	50	5.77	2.94
2	6	18	24			
2 1-4	4	10	14			
2 1-2	2	11	13	53	6.18	3.12
2 3-4	3	11	14			
3	4	8	12			
3 1-4	1	4	5			
3 1-2	7	7	14	28	3.23	1.65
4	4	5	9			
4 1-2	3	13	16	20	2.30	1.18
5	0	4	4			
5 1-2	1	3	4			
6	3	3	6			
7	1	1	2	15	1.73	.88
7 1-2	0	1	1			
8	0	2	2			
	218	649	867	867	100.00	51.00

In Tables 8 and 9 are given respectively, tabulated statements of "ocular reflexes" and "reflex neuroses of possible ocular origin" occurring in the 869 cases of refraction which this paper includes. That Table 8 shows a total of 1,467 cases is explained by the fact that two or more of the symptoms frequently occurred in the same individual. Distress from reflected

light I find to be the most common ocular reflex complained of, while aching or pain in the eye was not infrequently mentioned, and blepharospasm and blepharitis were quite common. There were ninety-seven cases of marked conjunctivitis and seventy-eight cases of excessive lacrymation. Of the symptoms in the reflex neuroses of *possible* ocular origin, I can only say I have emphasized possible, and will only add that they existed singly, in pairs and sometimes *in toto*, but to say that they all arose from eye strain is far beyond my desire. That many of them were of ocular origin I have but little doubt, and this is especially so in regard to the headaches which existed in 527 cases; about 60 per cent. of the

TABLE 3.—REFRACTION OF 193 MYOPIC EYES, ASTIGMATISM NOT INCLUDED.

0°	M	M Am	M M and Am	Eyes.	Per cent. of M.	Per cent. of all.
1-4	0	15	15	59	30.57	3.47
1-2	11	33	44			
3-4	5	11	16	42	21.76	22.47
1	9	17	26			
1 1-4	3	4	7	18	9.33	1.07
1 1-2	2	9	11			
1 3-4	1	6	7	14	7.25	.82
2	1	6	7			
2 1-4	0	1	1			
2 1-2	2	0	2	6	3.11	.35
3	1	2	3			
3 1-4	0	1	1			
3 1-2	0	5	5	10	5.18	.59
4	0	4	4			
4 1-2	0	2	2			
5	0	1	1	3	1.56	.17
6	3	2	5			
6 1-2	0	1	1			
7	2	0	2			
7 1-2	0	4	4			
8	0	4	4			
8 1-2	0	3	3			
9	1	3	4			
10	2	0	2	41	21.24	2.41
11	0	2	2			
13	2	2	4			
14	3	0	3			
16	0	1	1			
18	0m	3	3			
20	0	2	2			
22	0	1	1			
	48	145	193	193	100.00	11.35

TABLE 4.—REFRACTION OF 1,387 ASTIGMATIC EYES.

0°	H As	M As	M As and H As	Per cent. of H As	Per cent. of M As	Per cent. of H Asand M As
1-4	460	34	494			
	900	97	997	78.06	41.45	71.88
1-2	440	63	503			
3-4	102	32	134			
	153	59	212	13.27	25.21	15.28
1	51	27	78			
1 1-4	20	7	27			
	44	17	61	3.81	7.27	4.40
1 1-2	24	10	34			
1 3-4	6	6	12			
	21	15	36	1.82	6.41	2.60
2	15	9	24			
2 1-4	7	5	12			
2 1-2	9	9	18			
	22	33	55	1.91	14.10	3.97
2 3-4	0	4	4			
3	6	15	21			
3 1-4	1	1	2			
3 1-2	6 10	3 5	9 15	.87	2.14	1.08
4	3	1	4			
4 1-2	1	1	2			
5	1	5	6			
5 1-2	0 3	1 8	1 11	.26	3.42	.79
6 1-2	0	1	1			
8	1	0	1			
	1,153	234	1,387	100.00	100.00	100.00

patients. All headaches are not of ocular origin; errors of refraction uncorrected do not always produce headaches, but having found an error of refraction with headaches, especially of the fronto-temporal variety, following the use of the eyes, we have not room to doubt the wisdom of correcting the error. The variety of headache finds its classification in Table 10. The fronto-temporal is by far the most common variety, occurring in 40 per cent. of all headaches. Frontal, becoming occipital, is found in 16 per cent. of the headaches complained of and the primary occipital occurs in 11 per cent. of the cases.

TABLE 5.—AXES OF 1,434 EYES.

Hyperopic.	Eyes.	Per cent. of H As.	Per cent. of all.
Axis 90°, including all 90°	741	62.01	51.67
Axis 180°, including all 180°	240	20.08	16.74
Symmetrical not 90° nor 180°	66	5.52	4.60
Unsymmetrical	148	12.39	10.32
	1,195	100.00	83.33
Myopic.		**Per cent. M As.**	**Per cent. of all.**
Axis 90°	57	23.85	3.97
Axis 180°	121	50.63	8.44
Symmetrical	8	3.35	.56
Unsymmetrical	53	22.17	3.69
	239	100.00	16.66
	1,434		100.00

TABLE 6.—REFRACTION OF 47 MIXED ASTIGMATIC EYES, EXPRESSED IN TERMS OF CROSSED CYLINDERS.

0°	H As	Per cent. of H As.	M As	Per cent. of M As.
1-4	11	23.40	17	36.18
1-2	14	29.79	8	17.02
3-4	4	8.51	8	17.02
1	3	6.38	7	14.89
1 1-2	5	10.64	3	6.38
1 3-4	1	2.13	0	0.00
2	1	2.13	0	0.00
2 1-4	3	6.38	1	2.13
2 1-2	1	2.13	0	0.00
2 3-4	1	2.13	0	0.00
3	2	4.25	0	0.00
3 1-2	1	2.13	3	6.38
	47	100.00	47	100.00

TABLE 7.—AXES VARYING FROM 90° AND 180°—201 EYES.

Hyperopic.	Eyes.	Per cent. of Unsym. H Axes.	Per cent. of all Unsym. Axes.
One axis 90°	72	48.65	35.82
One axis 180°	17	11.49	8.45
Both axes the same, not 90° or 180°	2	1.35	1.00
Sundry, not in the above	57	38.51	28.36
	148	100.00	73.68
Myopic.		**Per cent. of Unsym. M Axes.**	**Per cent. of all Unsym. Axes.**
One axis 90°	5	9.44	2.49
One axis 180°	11	20.75	5.47
Sundry not in the above	37	69.81	18.41
	53	100.00	26.37
	201		100.00

TABLE 8.—EYE STRAIN WITH OCULAR REFLEXES—869 CASES.

Symptoms.	No. of Cases.	Per cent. of all Cases.
Aching or pain in eyeballs	333	19.59
Partial ptosis	6	.35
Blepharitis, styes, chalazion, etc	108	6.23
Blepharospasm	189	11.12
Conjunctivitis, marked	97	5.71
Lacrymation	78	4.59
Photophobia and { direct	174	10.23
Distress from light { reflected	482	28.35
	1,467	86.17

TABLE 9.—REFLEX NEUROSES OF POSSIBLE OCULAR ORIGIN.

Symptoms.	Cases.	Per cent. of Neuroses.	Per cent. of all Cases.
Headaches	527	60.86	31.
Insomnia	49	5.66	2.88
Dizziness	99	11.43	5.83
Mental symptoms, loss of memory, etc.	58	6.70	3.41
Morbid nervousness	127	14.67	7.47
Blind spells	6	.69	.35
	866	100.00	50.94

It will be noted that reflected light forms a very large percentage of complaints among the ocular reflexes. This is without doubt a greater factor with us in Southern California than in the other parts of the United States, accounted for solely by the fact that we have very white roads and streets, accompanied by about three hundred bright sunshiny days each year. When correction of the error of refraction fails to relieve this distressing symptom, I have found that greater relief is given by light blue than London smoked glasses.

107 North Spring Street.

SYMMETRICAL AND ASYMMETRICAL MERIDIANS OF THE CORNEA IN ASTIGMATIC EYES.

Read in the Section on Ophthalmology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY S. D. RISLEY, M.D., AND JAMES THORINGTON, M.D.
PHILADELPHIA, PA.

Much practical interest attaches to the symmetrical and asymmetrical direction of the principal meridians of corneal curvature in astigmatic eyes. My attention has been directed anew to the subject by the interesting papers of Drs. Knapp and Harlan, (Trans. Am. Oph. Soc. 1894) and by some recent studies of my own on the relation of asymmetrical meridians in the cornea and different grades of refraction error in the two eyes, to cases of abnormality of ocular balance. (*University Medical Magazine*, January, 1895). That these asymmetrical conditions give rise to the more severe forms of asthenopia can not be questioned. I have repeatedly brought forward statistics to show that emmetropia must be regarded as the standard refraction for the model eye, since emmetropic eyes and those which most nearly approximate this ideal state of refraction, bear the requirements of civilized life with a minimum of discomfort or peril. If this is true, eyes which do not conform to this standard are to be regarded as anatomically defective. It is a curious fact that these congenitally defective eyes should in so large a percentage of cases seem to fall under the operation of some law of symmetry. It has long been observed that in a large percentage of astigmatic eyes the meridian of shortest radius for each eye is either directly vertical, *i.e.*, 90° from a horizontal line, or symmetrically disposed to the vertical axis of the body. Knapp found this to be the case in 84 per cent and Harlan in 70.14 per cent. This fact awakens the most interesting inquiry regarding the anatomic conditions which determine it and also as to those which give rise to the very frequent variations. Any satisfactory answer, however, to such inquiries is extremely difficult to obtain.

Observations of certain anomalous conditions which obtain in cases of anisometropia with high grades of asymmetrical astigmatism seem to justify the belief that the form of the eyeballs is in great measure determined by the size of the bony orbits, and that the orbits are in turn modified in their various diameters by the abnormalities in the form of the skull. It is obviously difficult to secure the required data as to the form of the eyeballs in any given series and to subsequently measure the diameters of the orbits in the same individuals, but, a cursory inspection of a small number of dried skulls has shown me great variation in the measurements of the diameters of the orbits, that these variations were only a part of certain well-defined deformities in the diameters of the skull, and that the abnormalities in the orbits were associated with anomalous conditions in the bones of the face and nasal fossa. The purpose of the present study is to show to what extent these anomalous forms find expression in asymmetrical conditions in the direction of the principal meridians of curvature as expressed in astigmatic eyes. The present paper presents but one phase of the subject. I have observed in a number of patients presenting a wide difference of refraction in the two eyes, with high astigmatism in one and much lower in the other, and with asymmetrical meridians, that the condition was associated with a well marked difference in the two sides of the face. In a few instances the general deformity of the skull could be demonstrated by the hatter's form. While the relation between these conditions and the ocular anomaly may seem quite obvious in marked cases of deformity, it is more difficult to demonstrate any association in minor degrees of error; nevertheless they suggest not only the probable etiology of the astigmatic eye and its asymmetries, but also the probable origin of many cases of absolute abnormality in the ocular balance.

The following tables are based upon the analysis of 2,500 pairs of defective eyes, 1,300 from the records in my private case-books and 1,200 from the Wills Hospital records. In both the cases were taken without selection in the reverse order of application for treatment. The corrections were all made with the eyes under the full influence of a cycloplegic, the design being to ascertain as accurately as possible the static refraction of each eye in every case. To this end the ultimate test was the subjective examination, but this was, almost without exception, aided by the employment of the ophthalmometer of Javal and Schiotz, and the shadow test, one or both. In the private records, in a large number of cases both were used, while in the hospital cases the shadow test was employed in almost every case. The two records are kept separate in the tables to show the importance of great care in determining the refraction of the eyes. In the haste which it is necessary to observe in the crowded clinic room where a limited time only can be devoted to the correction of a large number of patients, it is not possible to give the painstaking care that is given during the longer time devoted to work in the private office. The result of this greater care, to absolutely reduce every eye to the optical basis of emmetropia, is shown by the different results reached. Then in the public service it was not always deemed necessary to correct the eyes of those employed in coarse labor, with the same accuracy as would be observed in the case of those engaged in finer pursuits.

The analysis discloses the percentage of simple myopia and hypermetropia, of monocular and binocular astigmatism. In the latter group the symmetrical and asymmetrical direction of the meridians of shortest radius were carefully noted. The result is disclosed in the condensed tables, which have been prepared with great care by Dr. Thorington.

All cases are grouped as symmetrical, where the combined value of the inclination of the meridians was 180° of linear development on an arc, counting from 0° on a horizontal line. Thus, if the meridian

of shortest radius was at 90° in both eyes, or at 60° on one side and 120° on the other, or at 75° and 105° respectively, they were recorded as symmetrical, since the sum of their values is in each case 180°, and so for any other inclination, *e. g.*, 0° and 180° or 15° and 165°, and so on. These symmetrical inclinations are divided into those according to rule (homologous astigmatism), *i. e.*, where the shortest radius was at 90° or approximately so, and those against the rule (heterologous), that is to say where the shortest radius was found at 0° or approximated the horizontal nearer than the vertical direction. The asymmetrical cases were also grouped according as the direction of the meridians approximated the vertical or horizontal direction. All cases where the combined values in degrees were greater or less than 180° are placed in the asymmetrical groups unless the meridians were at right angles. They were then placed in the group of heteronymous astigmatism. In the rare instances where the meridians were inclined from the vertical or horizontal, but were parallel to each other, they have been placed under the head of homonymous astigmatism. For example, if the axis of the correcting cylinder were required at 90° on one side and 75° or 60° on the other, it will be found under the head of asymmetrical astigmatism according to rule. If the axis was placed at 0° and 150°, respectively, it was placed under asymmetrical astigmatism against the rule. If at 0° and 90°, respectively, the case fell under the category of heteronymous, whereas if both axes were required, for example, at 60° or at 120°, it was recorded as homonymous astigmatism.

SUMMARY OF REFRACTION ERRORS AND DIRECTION OF MERIDIANS OF SHORTEST RADIUS IN 2,500 PAIRS OF EYES—1,300 IN PRIVATE—1,200 IN HOSPITAL RECORDS.

	Private.		Hospital.	
Simple myopia	7	.5%	25	2.0%
Simple hypermetropia	72	6.0	253	21.0
Monocular astigmatism	70	5.0	94	7.8
Binocular astigmatism	1,151	88.5	828	69.0
Total cases	1,300		1,200	
	Private.		Hospital.	
Binocular symmetrical astigmatism	694	60.2%	613	74.4%
Binocular asymmetrical astigmatism	310	26.8	158	19.8
Heteronymous astigmatism	123	10.6	40	5.2
Homonymous astigmatism	24	2.1	17	1.2
Total binocular astigmatism	1,151		828	
Symmetrical astigmatism..				
(*a*) According to rule (homologous).	543	78.2%	559	97.7%
(*b*) Against rule (heterologous)	151	21.8	54	2.3
Total symmetrical astigmatism..	694		613	
Asymmetrical astigmatism			158	
(*a*) According to rule	223	71.8%	126	79.1%
(*b*) Against rule	87	28.2	32	20.9
Total asymmetrical astigmatism	310			

DIRECTION OF MERIDIAN OF SHORTEST RADIUS IN ALL CASES OF SYMMETRICAL ASTIGMATISM.

Meridian at 90°	57.0+%
Meridian inclined 15° or less on each side	19.7+
Meridian inclined from 15° to 30° " "	4.0—
Meridian inclined from 30° to 45° " "	1.0
Meridian at 180° or 0° " "	12.0
Meridian inclined 15° or less " "	4.0—
Meridian inclined from 15° to 30° " "	2.0
Meridian inclined from 30° to 45° " "	.5

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LATENT ASTIGMATISM.

Read in the Section on Ophthalmology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY HORACE M. STARKEY, M.D.

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For a number of years the conviction has been deepening in the mind of the writer that latent astigmatism plays a much more important rôle in the production of asthenopia than is usually supposed, if one may judge from the attention given to this subject in text-books and monographs. This conviction has been more decided, since it has become more common to give patients lenses correcting the apparent error, to be worn continuously for one or more days, after which another test of the refraction is made.

Some of the members of this Section may remember that the writer one year ago mentioned with praise the practice, common with some ophthalmologists, of giving lenses, not only spheres but cylinders, to patients to be worn a few days for trial before writing the prescription for permanent glasses. Again, your attention is called to this procedure with the certainty that no one of you who may employ it will willingly discontinue a plan so satisfactory both to physician and patient. For convenience, the oculist must provide himself with a number of pairs of light spectacle frames, of various dimensions and differing in no way from ordinary spectacle frames except that the cells must be round instead of oblong, so that cylinders and prisms may be rotated in any direction. With a supply of lenses ground to fit these frames the oculist can, in a moment, adjust almost any combination. It is all very well to say that a cycloplegic must be used in every case and that full correction of the error thus found must be prescribed. But often this is absolutely impracticable. Many patients will not submit, but will go to the optician and take whatever he may offer, rather than subject themselves to the action of even the most evanescent of the cycloplegics. Many of the busy men and women in banks, stores and schools who most need skilled services, are willing to take half an hour or an hour a day for a week or two if necessary, but absolutely refuse to give up the whole of one or more days. While not ideal this method has much to commend it and leads to correct results. Not the least point in its favor is the fact that it keeps the patient comfortable from the first; which with the nervous, the irritable and the skeptical is no small matter. Since proceeding in this way with many cases, the frequency with which latent astigmatism is a very important factor in the causation of asthenopia has been forced upon the writer's attention as never before. And this because it presents a much more vivid object lesson, when one works out the refraction as carefully as possible with the ophthalmoscope, the retinoscope and the test lenses, gives a cylinder which seems to correct the error and finds, when the patient returns in one or two days, the former amount of manifest astigmatism doubled, and after a further time, that a still higher degree of astigmatism has become manifest. This method presents a much more vivid object lesson than the correction of the same error under a cycloplegic. These object lessons became so frequent that they could not be ignored and led to a reëxamination of the text-books on ophthalmology to learn the teaching of the authorities on this point. This teaching, as shown by twelve recent works, may be briefly summarized as follows: in the following, De Schweinitz, 1892; Juler 1893; Norris and Oliver 1893, and Kies 1895, nothing on this topic could be found.

Nettleship, "Diseases of the Eye," 4th American Edition, 1890, page 354, has the following: "There seems no doubt that in young persons with vigorous accommodation, the astigmatism of the cornea is often partly corrected by the ciliary muscle acting unequally on the different meridians of the

lens; and that the seemingly greater frequency of astigmatism in the presbyopic is due to the impairment of this power."

Schmidt-Rimpler (Roosa) 1889, "Ophthalmology and Ophthalmoscopy," pp. 82, 83, says: "Differences in the meridional curvature of the lens occur occasionally from partial contraction of the ciliary muscle and, if situated in the opposite direction, serve to diminish the corneal astigmatism." . . . "In rare cases, astigmatism depends solely on anomalies in the curvature of the lens and disappears after the use of atropin." And again, page 88: "In all these tests the results are often disturbed and confused by partial contraction of the ciliary muscle, which as we have mentioned may cause diminution, and even abolition of the astigmatic error of refraction. The use of atropin relieves this difficulty, but it is to be noted that the correcting lenses which are then found, are often discarded by the patient on the restoration of accommodation."

From "Errors of Refraction," Valk, 1890, page 158: "Let me caution you at this point that you may meet cases of astigmatism that will be concealed or caused by irregular contraction of the ciliary muscle, thus changing the refraction of the lens in different meridians. This condition you will discover by the action of atropin, and by the ophthalmoscope." He also gives several examples among the "illustrative cases," where astigmatism was made evident or increased by use of atropin.

Fuchs' "Text-book of Ophthalmology," 1892, p. 655: "Another cause of asthenopia lies in the endeavor of the astigmatic patient to correct his astigmatism by means of his accommodation. For this to be effected, it is necessary that the act of accommodation shall take place with a varying degree of force in the separate meridians of the lens. That this can be done, is proved by the fact that after atropinization the astigmatism is not infrequently found to be considerably higher than before."

Berry, "Diseases of the Eye," 1893, page 556, teaches that corneal astigmatism according to rule is lessened by lenticular astigmatism, while that contrary to rule is increased by the action of the lens.

"Anomalies of Refraction and of the Muscles of the Eye," Tiffany, 1894, p. 208: "Astigmatism is frequently concealed by the power of accommodation, especially in the low degrees. In these individual cases, as before said, complete mydriasis is imperative that the true conditions may be revealed."

Noyes, "Diseases of the Eye," 1894, p. 114: "Astigmatism of the lens may increase or diminish that of the cornea. Javal has shown that a small fraction of the total astigmatism is due to the lens; he has also shown that by accommodation the lens may partly or wholly neutralize asymmetry of the cornea. He, and before him, Dobrowlsky, attributes this to unequal contraction of the ciliary muscle." . . . "Latent and manifest astigmatism refer to the influence of the accommodation in concealing or modifying the error."

Roosa has considerable to say about the position and shape of the lens as permanently modifying corneal astigmatism, but says little about astigmatism becoming latent. Roosa, "Treatise on Diseases of the Eye," 1895, p. 497: "The subtraction of half a dioptre," (from the corneal astigmatism as shown by the ophthalmometer) "for the neutralizing action of the lens will generally give, in astigmatism with the rule, the degree that remains for correction, and as Donders stated in 1864, in the English language, the total astigmatism of the dioptric system of the eye: . . . "In corneal astigmatism against the rule, the action of the lens does not, (whatever it may be) practically relieve the astigmatism. It must then be fully or over-corrected in order to relieve the symptoms."

We find that of these well-known authors, four do not mention the subject; two speak of the lenticular astigmatism as modifying that of the cornea, but do not mention the correcting action of the ciliary muscle, and six show such action as an important and always to be remembered factor. In so far as any mention is made of the point, it is taught that the action of the lens only corrects corneal astigmatism when the latter is according to rule. The writer's cases, however, show that a portion of the astigmatism may be latent, whether the meridian of greatest curvature is vertical, horizontal or diagonal. To illustrate how latent astigmatism may be rendered manifest by the use of cylinders, ten cases seen in private practice during the last four months of 1894 are taken. Each of these showed an increase of from 0.25 to 1 D. in the manifest astigmatism. They were all relieved of severe asthenopia by the use of cylinders and have had no return of the asthenopia in the intervening time, four to eight months. (About the same number of similar cases have been seen since Jan. 1, 1895.) For lack of time but four cases are given in detail.

Case 1.—Mrs. H., stenographer, age 28. Had been unable to work for several months on account of headache from which she has always been a sufferer. Apparent astigmatism of 0.37 D. according to rule increased by use of glasses two days to 0.62 D., which gave complete relief so that work was resumed. Relief has continued to the present time without further increase of astigmatism.

Case 2.—Mr. M., medical student, age 22. Apparent astigmatism of + 0.37 D. at 105° and 100° increased to + 0.88 D. at same angles.

Case 3.—Frances F., age 13. Apparent astigmatism of + 0.37 D. × 90 each eye increased to + 1 D. and + 0.88 D. × 90.

Case 4.—Mrs. Dr. W., age 41. First seen Sept. 6, 1894. Eyes tire quickly and she has much headache, particularly after going to theater or other places where faces are watched. Examination shows astigmatism, which appears to be corrected by + 0.37 D. C. × 90 each eye, which glasses seeming very restful, are given for use for twenty-four hours. September 7. Requires + 0.75 D. C. × 90 each eye, which were given September 8. Requires + 1 D. C. × 90 each eye. Prescribed + 1 D. C. × = 90 for each eye. These glasses have been worn continuously since with great satisfaction and comfort, though the left eye would now take + 1.25 D. C.

Case 5.—Mrs. J. F. D., age 31. Apparent astigmatism of + 0.62 D. and + 0.37 D. × 180 increased to + 1.25 D. and + 2 D. × 180. Subsequent use of cycloplegic showed this to be the total amount of astigmatism.

Case 6.—Miss C. E. W., trained nurse, age 29. Has had very severe and almost constant headaches for many years. October 2, apparent astigmatism + 0.62 and + 0.50 D. × 90, for which lenses were given. October 4 accepts + 0.88 and + 0.75 D. C. × 90. October 5. No headache, though eyes were used much by artificial light at fancy work, etc., to try them. Likes + 0.88 for each eye, which was given with complete relief.

Case 7.—Mr. J. B. C., age 24, copyist. Apparent astigmatism of + 0.37 D. and 0.25 D. contrary to rule increased to + 0.62 and + 0.50 D. at same angle.

Case 8.—Mr. R. A. S., medical student, age 32. Dec. 13, 1894. Has worn + 0.50 D. C. contrary to rule for each eye for about five years. Have not seemed right of late. Requires now + 1 D. C. × 15 and + 0.62 D. C. × 180. These are given. December 17. Has used above with much more comfort than former glasses. Now requires + 1.25 D. C. × 15° and + 0.88 × 180, which are tried. December 21, likes above very much, so prescribed + 1.25 D. C. × 15° and + 0.88 × 180, which give entire satisfaction.

Case 9.—Miss O. B., age 31. Dec. 12, 1894. Apparent astigmatism of right eye corrected by + 0.75 D. C. × 60; left eye hyperopic 1.25 D. These lenses worn till December 31, when R. E. requires + 1.50 D. C. × 60, which is given. Jan. 3, 1895, R. E. requires + 1.75 D. C. × 60. Further astigmatism not developing, + 1.75 D. C. × 60 and + 1.25 D. S. were prescribed. These have been used with comfort ever since and eyes are used more easily than for many years.

Case 10.—Mr. G. H. C., age 24. Clerical work. Has constant headache and eyes tire easily. Appears to require — 0.25 D. C. × 90, but retinoscopy favors + 0.25 D. C. × 180. — 0.25 D. C × 90 for three days were not comfortable. Used + 0.37 D. C. × 180 three days, without headaches and could use eyes much more easily. Now finds + 0.50 D. C. × 180 good, and three days later + 0.62 D. C. × 180, which were finally given. Eyes have since been used without headache or weariness.

We see that of these ten cases, four had astigmatism according to rule and a fifth had the angles but 10° and 15° from the vertical; three had astigmatism contrary to rule and one varied but a few degrees from this; one had the very irregular angle of 60°. Seven eyes show an increase of 0.25 D. in the astigmatism; three show 0.37 D; two 0.50 D.; five 0.62 D.; one 0.75 D., and one 1 D. increase in astigmatism.

SUMMARY.

1. Latent astigmatism is a frequent and important cause of asthenopia.

2. The latent astigmatism may in many cases be made manifest without a cycloplegic and without interfering with the patient's business by giving lenses which correct the manifest error, which may be worn a day or two, when an additional amount of astigmatism will be manifest which may be corrected in the same way, and so on till all the latent trouble is unmasked.

3. This may be done without discomfort to the patient, and is therefore advantageous with the skeptical, irritable and nervous.

4. Recent text-books do not give this subject the attention its importance deserves.

5. Astigmatism may be latent whether the axis of greatest curvature is vertical, horizontal or diagonal.

3300 Indiana Avenue.

ANOMALIES IN OPHTHALMIC PRACTICE.

Read in the Section on Ophthalmology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY A. C. CORR, M.D.

CARLINVILLE, ILL.

In presenting this paper I am not proposing to present anything new, but merely to bring in a few topics that, to say the least, are out of the ordinary way in ophthalmic practice, and therefore are entitled to be designated as anomalies.

Case 1.—Congenital Interstitial Opaque Infiltration of the Cornea, not Syphilitic nor Cicatricial. Dec. 1, 1893, was presented for treatment Anne H., a two months old, healthy, well-developed child. No appearance of disease, past or present, except that both cornea were nearly entirely opaque. At once I asked the mother when the baby had sore eyes, to which she replied: "Its eyes have not been sore." "When did you notice this condition of its eyes?" She replied: "When it was ten days old." "Has there been any yellow or gummy discharge from the child's eyes?" She replied: "There has not." "Had you any leucorrhea or whites before or about the time the child was born?" To which she replied, she had not. "Do you know what I mean by this discharge of 'whites' or leucorrhea?" She said: "Yes, for I had it when my second child was born and it made her eyes sore. They were very sore at once and for a long time and it made her eyes white, too, as you can see."

On closer examination of the child's eyes the cornea proved to be smooth and regular in contour, lids normal, eyes well formed, epithelium of cornea well formed and clear and smooth. Irides, hazel brown. Immediately below the corneal epithelium there was almost a uniform white opacity. R. E., the opacity was so thick and uniform that the *pupil could not be seen*, and the *iris but dimly*, to lower and inner part. The opacity was thickest in upper and outer part. L. E., the pupil was visible only from lower and inner side under the opacity that extended from above and outward, where it was entirely opaque. This condition was in marked contrast to the eyes of the next older child, Minnie, aged 6 years, who had evidently had ophthalmia neonatorum. The cornea of her eyes was small and distorted, the surface irregular and not smooth, nor the epithelium well formed. The opacity was apparently in the epithelium and subjacent layers. The lids showed also signs of the past disease. The epithelium of the palpebral conjunctiva was degenerated, thick and cicatricial. This child, too, was well grown and healthy.

The eldest child, Teana, aged 9 years, was a well-formed, well developed child. Bright and intelligent, eyes without blemish. The teeth and jaws of the two older ones were well formed and normal. No history of skin disease was elicited.

The father, Fritz H., aged 30 years, of German parentage, about five feet, five; health good. Had never exposed himself out of wedlock so as to acquire syphilis. Physical examination revealed no signs of it.

Mother, Annie L. H., aged 30, medium size, well formed, health good, German parentage. Pregnant three times only, and three children as above. Never had falling of hair, skin disease, nor cutaneous discolorations. Says her husband does not drink, and is attentive to his family. They are a neat, clean and tidy family; farmers, living in small town.

Dr. C. W. Johnson, of Litchfield, Ill., a well-informed physician, graduate of Jefferson Medical College, in active general practice, saw the patient and after hearing the history said, that it was a great curiosity. The merest tentative treatment was prescribed: aqua pura, ℥i; acid carbolic, gts. i; acid boracic, gr. xv. Mix with collyria.

Sig., put a few drops in each eye three times daily.

In the meantime, I addressed a letter to Dr. M. Thomas, B. S., the family physician, a physician personally known to me, of good reputation, in active general practice for ten or more years, who wrote under date of Dec. 12, 1893: "I have investigated the matter. The child has not had inflamed or sore eyes since its birth. I am satisfied it was born as you see it. Nor have the parents had syphilis. I know them well."

December 15. Mother thinks the eyes are improved, child is developing well in every way, other than condition of eyes. Slight lateral nystagmus. Treatment same.

Jan. 19, 1895. Condition of eyes perceptibly improved. Pupil can be seen through apex of cornea in L. E. and through lower and inner part of cornea of R. E., child enjoys looking at light of lamp or window. Nystagmus present. Child developing nicely. Thickest part of nebula above and to outer side both eyes. Ordered collyria continued and a little Pagenstecher oint. well but lightly rubbed on outside of lids daily.

March 2, 1894. Child doing nicely. Developing well; corneal opacity clearing up more perceptibly in both eyes. Nystagmus. Continued medicine as before.

April 13, 1894. Improvement marked, yet not so rapid apparently. Treatment same.

May 25, 1894. Much improved. L. E., cornea clear except a small area. Child developing well. Follows objects with eyes and uses its hands with fair accuracy to grasp at objects apparently seen. Oint. and collyria as before continued.

July 20, 1894. Corneal opacity improving. Pupil of R. E. clearly seen through apex of cornea. Nystagmus less.

Sept. 7, 1894. Corneal condition improving. Slight signs of internal strabismus of R. E., continued treatment.

Dec. 14, 1894. Now one year and fourteen days under observation, and child one year and two months old. Condition of eyes much improved. L. E., nearly entirely clear. R. E., slight haze below apex of cornea and almost imperceptible over apex of cornea. Slightly more decided opacity above, as if sclera was slightly advanced on to contour of cornea. Nystagmus still perceptible, R. E., strabismic. Divergent power normal when L. E. is covered. Has four incisor teeth above and below and two bicuspids just emerg-

ing in upper jaw. Teeth not deformed, blackened nor decayed. Health good. Eats some at table and amuses itself with toys.

April 28, 1895. The child has grown and is well developed; walks and amuses itself with playthings, and its vision is apparently good. Has many teeth—none decayed; on focal illumination of the left cornea, there is slight nebula of former opacity seen. In R., corneal opacity is seen plainly without illumination. The apex of the cornea is nearly perfectly clear, but there is a ring around the apex of the cornea about 3 mm. in diameter that is somewhat more marked, and at upper part of cornea the opacity appears as if the sclera was extended about 1 mm. on to the cornea. Nystagmus less. Squint mostly in R. E., but alternating.

Case 2.—Keratitis-materni, twice recurring. Nov. 12, 1892, Mrs. Eva S. presented herself for treatment of her sore eyes; 24 years old; married. Two children, youngest seven months and nursing. Eyes have been sore two months. Patient, medium-sized, not well nourished, pale and anemic, dark hair and fair-complexioned; hazel brown eyes. Conjunctiva of both eyes hyperemic. On right eye the cornea was involved with what seemed to be an unusual variety of keratitis. It consisted in a band of brownish red, almost the entire circumference of cornea on inner and lower portion, about 1 mm. wide; loss of epithelium and linear extension of capillary blood vessels from conjunctiva on to the cornea to the extent of the width of the band. The cornea was not otherwise hazy, aqueous clear. Pupil not sluggish, nor other evidence that iris was involved. Photophobia marked in R. E., and pain and tenderness complained of, mostly in R. E. The eye was cocainized and the band examined with probe. It bled freely on being slightly touched. The eyes were washed out freely with boric acid solution. Pupil of R. E. dilated with atropia, yellow oxid oint. with atropia applied nightly in the usual way and both eyes washed out with boric acid solution, two and three times daily.

Nov. 20, 1892. No improvement. The band had extended entirely around the cornea and was widened. Pupil well dilated and other indications of the medicine having been properly used. Conjunctiva of L. E. much more hyperemic. Photophobia increased. Being somewhat astonished at the condition, I inquired more closely into the constitutional condition of the patient. I found no clue to a specific disorder, but not knowing what else to do, I suspended the oint. and prescribed pot. sol. iod.; hydrarg. chlor. corros. Take a teaspoonful, four times daily.

Dec. 10, 1892. Condition much the same; certainly not improved. Whereas she had before been screening eyes with London smoked coquelles, I ordered R. E. kept bandaged, and in addition to the above, ordered quinia grs. xxx, taken in next twenty-four hours and quinia grs. iij taken every morning at 9 o'clock.

Jan. 20, 1893. No improvement. The band had widened in R. E. to near 2 mm. and same condition had involved nearly the circumference of L. E. The non-involved surface of both cornea clear, and none of the white infiltration of cornea that usually accompanies keratitis. The margins of the band on the cornea were markedly even on both eyes. As my astonishment had in nowise abated I ordered the potassio-mercuric solution alternated every four hours with dessertspoonfuls of elixir of pyrophosphate of iron and calisaya bark; stopped the quinia and bandage left off; coquelles as before.

Jan. 28, 1893. Much improved; spirits much more hopeful. Keratitis much abated. Hyperemia of conjunctiva less. Photophobia less; appetite good; sleep good. Ordered the potassio-mercuric solution discontinued and elixir of prophosphate of iron and calisaya bark in dessertspoonfuls regularly every four hours. Measured refraction, and ordered full correction of ½ D. hyperopia, worn all the time.

Feb. 27, 1893. Patient about well; only slight traces of trouble left; photophobia gone; doing all her work for family and has continued to nurse child all the time. Ordered dose of elixir three times daily and collyria discontinued.

March 15, 1893. Patient apparently quite well. Almost no signs of past keratitic trouble. Ordered elixir taken twice daily, as long as nursing continued. April and May saw the patient. She remained well.

Sept. 5, 1894. Patient again presented herself for treatment of eyes. Nursing third child, which was born in May, 1894. Eyes became sore in August, two months earlier than before. Condition of eyes exactly as before in the beginning. Brownish vascular band partly surrounding the R. cornea; both conjunctivæ hyperemic, with the addition of a slight redness and abrasion along the margins and tip of the tongue, with the characteristic scalded feeling of stomatitis materni. This latter confirmed my notion that led to the prescribing of the elixir of pyrophosphate of iron and calisaya bark, that it was a keratitis caused by the conditions that gave rise to the nursing sore mouth that I had treated often in its purity while in general practice.

That sterling remedy which has proved more nearly a specific in stomatitis materni under my observation than anything else, the elixir, as before, was at once ordered in dessert spoonfuls four times daily, with an occasional washout of the conjunctival cul-de-sacs with the boric acid collyria.

October 15. The patient seemed about well. The disease had not extended and began to abate within a week after the remedy was taken.

November 10. Patient wrote she was well. I ordered her to continue the elixir in doses as before, twice daily while nursing. I am satisfied she is well of her eye trouble to date.

Now you may ask why do I call it keratitis materni? Because it originated as a part of the assemblage of symptoms that characterize that maternal disease of stomatitis and *not* amenable to ordinary treatment of the local eye disease, but readily and perfectly amenable to the constitutional and general treatment useful in the disease known in general and obstetrical practice as stomatitis materni.

Case 3.—Piece of Orbital Bone Encapsuled in the Globe, two and a half years. Choroid not Totally Disorganized. July 15, 1892, Mr. C. R. B., presented himself for consultation in reference to the future sight of his right eye which was injured on July 4, by a rocket that did not sky. He said he was sitting some distance—forty yards—from the stand where the fire-works were being exhibited and that one rocket, after the fuse was lighted, fell so it flew off horizontally and struck him in the eye. There was a deep lacerated wound of the skin just at lower margin of orbit, and tissues generally bruised and discolored. The tension of the globe was minus. Cornea normal and clear. Anterior chamber well formed. Pupil slightly dilated. Lens normal with a pink reflex. No reflex from fundus. Eye sightless. These facts together with the evident severity of the contusion led me to send the attending physician a note that the eye would be sightless and would better be removed.

I saw no more of the case till I was called Jan. 8, 1895, to remove the eye. At this time there was a deeply sunken and adherent cicatrix at the middle and margin of the lower orbit, lower lid everted, and slight whitish secretion in lower conjunctival cul-de-sac. Globe shrunken about one-third and only slightly tender. Tension minus. But little of cornea visible, sclerotic nearly normal in appearance. Patient said the globe had been tender by spells, and he had some discomfort about the orbit. Bits of bone had been discharged through the skin wound and the nostril had discharged more or less secretion all the time. The globe was removed in the ordinary way and without any incident worthy of note. Immediately after its removal, I incised the globe and found inside a shrunken opaque lens and some fluid contents, rather clear than opaque, choroid only partially disintegrated and adherent to sclera in places. At posterior and lower part near the disk, a hard lump of dense tissue was noted, which rattled under the knife when cut and, by close work, I dissected out the bone you see in the hardened specimen. It is about three-eighths of an inch long, little more than one-sixteenth of an inch in lateral dimensions, slightly irregular in shape and has a smooth notch near its middle as if a margin of a foramen—probably the infra-orbital—and had been evidently encapsuled in the interior of the globe since the wound by the rocket, July 4, 1892, two and a half years ago.

Case 4.—Hemorrhage of the Iris, as a Result of Slight Iridectomy in Cataract Extraction. July 29, 1894, Mrs. M. A. T., a lady 65 years old, took her place on the chair for cataract extraction on R. E. She was prepared in the usual way. The first incision was made wholly in the corneal tissue. An iridectomy was decided upon because the pupil did not dilate round, but rather oval, vertically, and the cataract was of long standing. The iridectomy forceps was introduced and the inner edge of the iris grasped, drawn out and snipped with the scissors so as to just allow of the passage of the lens. Not more than one-half of the width of the iris was cut out. The instant the iris was cut, the anterior and posterior chambers were filled with blood which could be plainly seen, issuing from the edge of the iris. Soon everything in both chambers of the eye was obscured by the blood, and no further progress could

be made till the blood was washed out. The corneal flap was made to gap, and a moderate jet of mildly borated water was made to enter the chambers from a dental bulb syringe until all blood stains were out of the way, when the operation was terminated and the chambers again cleansed by detergent force of the jet as before. No untoward effect followed the hemorrhage, except that there was more of the inflammatory exudate in the gap in the iris. This, however, was all absorbed, and after a secondary operation, a month later, the vision was fairly satisfactory. Of course such hemorrhage was unexpected, unprepared for, embarrassing and somewhat astonishing. The only thing unusual in the appearance of the eye was that one of the superficial conjunctival vessels dipped into the sclera within 2 mm. of the sclero-corneal junction just opposite to where the iridectomy was made. I do not remember having seen an account of but one such case in the ophthalmic literature that has come under my observation.

Case 5.—Calcareous Lens, Occluding the Pupil, Becoming Detached, Dislocated and Floating—Iritis—Requiring Removal. Nov. 21, 1894. T. R. H., a gentleman about 25 years of age, a mechanic, presented himself for consultation and treatment of right eye. He said the white in his eye had gone, and was moving around. I recognized the gentleman as one I had observed some time before, having the pupil of the right eye occluded as a result of plastic iritis caused by being struck in the eye with a ball when about 16 years old, since which time he had had the ordinary white and undilatable pupil which characterizes an occluded pupil. The iris was somewhat discolored as compared with its fellow. At this time the "white" in his eye was gone and was moving around. The tension of the globe was minus, but not markedly so; within the past few days the patient had sustained some slight stroke on the eye; so slight as not to attract attention only that he accidentally learned that the "white" in the pupil had been dislocated. On close examination of the eye, now, I found a white floating body about three-sixteenths of an inch in dimensions behind the iris, that was sometimes in the anterior and sometimes in the posterior chamber. At this date the eye did not show signs of irritation.

November 28. Patient presented himself with marked circumcorneal hyperemia and the eye tender. I advised no longer hesitation about its removal, to which patient readily acceded, but at this time I could not get the lens dislocated into the anterior chamber. So I at once produced homatropin mydriasis and had the patient lean far over with face on hands till the lens came forward into the anterior chamber when eserin was instilled, until the mydriasis was overcome and sufficient myosis was produced to retain it there and the operation was proceeded with. But, alas! not with the perfection I had anticipated. After the corneal incision the lens would not deliver easily. It seemed to hang to the iris. I introduced the ordinary iris forceps and grasped the lens a little too far back, being deluded by the media I was looking through, and the unexpected hardness of the body, and it slipped and went over into the posterior chamber. So an iridectomy was made and the operation completed in the ordinary way.

The result brought a good appearing eye and looks better than it did before when the pupil was occluded with a white spot. The eye has no perception of light, and no reflex obtainable from the fundus.

I meant to exhibit to you the pure specimen, but am obliged to present it crushed by the postoffice stamp. The crushed condition may be better for examination.

NOTES ON TWO CASES OF LARYNGEAL NEUROSES.

Read in the Section on Laryngology and Otology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7–10, 1895.

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Case 1.—Mrs. O. H., widow, tall and rather slender, age about 63 to 65, native of Baltimore, was referred to me by Dr. Samuel T. Earle, of this city, is a woman of culture and refinement and has lived in affluence and ease most of her life, but had met with some reverses of fortune some years before, and her physician told me that for years past she had been in poor health and was somewhat of a neurasthenic, but was never hysterical.

About three weeks before she came under my care she was seized with an acute laryngitis with aphonia. Dr. Earle applied the usual remedies, but finding the patient got no better, sent the case to me. On examination, the pharynx was highly congested, reddened and hyperesthetic. It was with great difficulty after several visits that I got a view of the larynx, partly owing to the overhanging epiglottis, but principally on account of the morbid irritability of the pharynx. Cocain in this case seemed to have little effect. A good view, however, of the larynx about the fourth visit was secured, and laryngitis was seen to be present, yet not reddening the cords throughout their entire extent, but an image was revealed, showing that I had to deal with a paralysis of the arytenoideus muscle. The cords from the thyroid angle to the vocal processes were properly approximated on attempts at phonation, but the characteristic triangular space between this point and the posterior commissure left no room for doubt as to the diagnosis. The phonative waste which Von Ziemssem first appropriately called this loss of air in this form of laryngeal paralysis on phonation, was well marked.

The treatment at first was directed to the cure of the laryngeal inflammation by means of the usual local sprays, and later, strychnia in increasing doses and electricity were used—the faradic current locally and occasionally generally—for the cure of the neurosis, or stimulation of the recurrent nerve.

From February 6 to April 20, the patient came to see me on alternate days, generally, and by this latter date the normal color of the pharynx and larynx had apparently returned and yet the characteristic triangular space, the aphonia and phonative waste were all unchanged. I decided now to send the patient to the seaside; she accordingly went to Atlantic City, and remained there several weeks, when she returned and again reported at my office—"no better." The laryngeal image was in *statu quo*.

As the inflammation, as far as I could determine was gone from the larynx and not the least improvement in phonation had taken place, I was inclined to give an unfavorable prognosis. In the meantime local treatment, strychnia and electricity were resumed, and on June 14, six months after the beginning of her aphonia, I sent her to the country for the summer with no better voice than when she came under my care. I told her family I feared she would never fully regain the use of her voice. In this I was mistaken; about the middle of August she suddenly regained it and it has remained unimpaired up to this time.

Was this a case of paresis from acute laryngitis, penetrating into the deeper structures causing pressure on a branch of the recurrent laryngeal (the most usually assigned cause of this neurosis) or was there an hysterical element present also? That the acute cold was the exciting cause there is no doubt whatever, and it is not impossible that continual pressure on the nerve-twig supplying innervation to the arytenoideus, had left the nervous energy so weakened, even after the entire disappearance of the inflammatory thickening, that a prolonged stay in the country was necessary to build up the tone of the entire nervous system before the twig could be excited into activity.

Sajous says this form of paralysis occasionally results from hysteria. Ingals says it most frequently results from acute or subacute laryngitis.

Lennox Browne says this form of paralysis may be seen in acute catarrh and it is a question whether this and some of the temporary paralyses may not be due to inflammation of the small glands which are situated around the terminal branches of the recurrent nerve.

Bosworth cites three cases reported by Proust—one due to incipient phthisis, one to hysteria, one to catarrhal laryngitis, and one by Johnson due to diphtheria. He further says that hysteria was the assigned cause in cases reported by Mackenzie, Luaga,

and Duncan, and Von Ziemssen has observed a case which followed directly upon cold.

This last case is *one* of only *two* mentioned in his (Bosworth's) work as having acute laryngitis as the cause. In looking over six authors I found this to be the most commonly assigned cause. But I did not find any reference made to the possibility of this dual causation, both factors acting at the same time.

My case was clearly due to acute laryngitis, but its failure to get well after all laryngoscopic traces of laryngitis had disappeared, and the sudden restoration of the voice months afterward, points to an hysterical etiologic element, which greatly delayed recovery. Knowing that acute laryngitis ushered in the aphonia, my efforts were at first all directed to the cure of the former affection, which yielded completely so far as laryngoscopic appearances could establish this fact; yet failing signally to relieve the aphonia after the very apparent cause had been removed and strychnia and electricity doing no good, I gave an unfavorable prognosis, which naturally distressed the patient and her family not a little. Had I suspected that hysteria was a latent etiologic factor, it is very probable I could have restored her voice at any time after the laryngitis disappeared.

Case 2.—Mrs. D., married, age about 50, mother of four children consulted me Jan. 16, 1893. I learned that in the previous November she had suddenly lost her voice without any premonitions except the "rising in her throat of a lump or ball the size of a large marble." From this time on, she had been unable to speak except in the whispered voice.

The laryngoscope revealed the characteristic laryngeal image of unilateral adductor or recurrent paralysis of the right side. On attempted phonation the left cord went beyond the median line and near its fellow, but not sufficiently close to produce more than the whispered sound on attempted phonation.

The patient was very despondent and often shed tears over what she considered her hopeless condition, and all assurances on my part that she would regain her voice were met by a shake of the head and tears.

I felt sure of her ultimate recovery and assured both her and her husband, who is a prominent clergyman of this city, that I had no doubt of restoring her voice. The husband was easily convinced, but all my assurances failed to produce any impression upon her and in consequence all my remedies—applications, sprays, electricity, etc., utterly failed to give relief, for you must all agree with me that the case was one of hysterical aphonia.

This being the first case of unilateral paralysis, of clearly hysterical origin, that I had ever seen, I was anxious to verify the diagnosis, by curing the case so promptly that no doubt would be left as to its etiology. In this I was disappointed as I have before indicated. She remained under my care until warm weather, when she was sent to the mountains and after a month or more her voice returned as suddenly as it had disappeared, thus confirming my diagnosis.

When she returned to the city in the fall, she came to see me, and a surprise awaited me when I made a laryngoscopic examination. I found the right chord still in the cadaveric position and the oblique glottic space and over-riding left arytenoid on phonation (the same image) that of right adductor or recurrent paralysis—only the left chord now came close enough to its fellow for the purposes of phonation. She now made known important information, which she had withheld from me, fearing it would influence me, and cause me to give an unfavorable opinion at her first visit. She told me that seven years before, she had consulted an eminent specialist of this city, who had diagnosised paralysis of the chord and told her she would never get well. This had preyed on her mind and she confessed it was the chief cause of her incredulity to all my promises of cure. During the seven years and up to November, 1892, (when her voice suddenly left her entirely) she had simply impairment of the voice, but could always use it in ordinary conversation—it had neither gotten better nor worse.

The case was now clear—I had to do with a case of hysterical paralysis, engrafted upon a long-standing case of unilateral adductor paralysis. As soon as the hysterical element had spent its force, a restoration to the condition induced by unilateral adductor paralysis was effected. I had a view of her larynx recently and the laryngeal image is still unchanged. Her voice is fairly good for conversational purposes, but when she talks much she feels a tired sense in the muscles of the left side, due to strain on the adductors in carrying the left chord beyond the median line.

It may be interesting to cite the opinion of several prominent authors as to the etiology of unilateral adductor paralysis before closing the notes on the case.

Sajous, p. 366, says: "That adductor paralysis, bilateral or unilateral, can be due to pressure on the recurrent laryngeal nerve, without involving the other muscles of the larynx supplied by that nerve, seems to be very doubtful." While Ingals, p. 503, says: "Unilateral adductor paralysis is caused in most cases by pressure upon the recurrent laryngeal nerve, by aneurysm, tumor of the neck, cancer of the esophagus, etc., and not infrequently by hysteria."

Bosworth, p. 665, says: "I have never seen a case in which I felt warrranted in making a diagnosis of this form of paralysis." He thinks it extremely difficult to differentiate the affection from unilateral recurrent paralysis.

Lennox Browne, quoting Mackenzie, says of unilateral adductor paralysis: "This rare condition may be due to chronic toxemia, lead, arsenic, diphtheria, etc.; may result from cerebral disease or may be caused by cold, or muscular strain; and is met with after smallpox, in constitutional syphilis and in phthisis."

McBride's edition of 1892, says: "Pareses confined to the muscles which close the glottis are usually, if not always, due to functional changes in the nervous system, of which we may consider hysteria as the type." In support of this opinion he cites Semon and Horsley's experiments, where unilateral irritation of the corticular area in the brain, of adductor movements, produced bilateral adduction; but unilateral extirpation of the area produced no effect. "Having had access," he says, "through the kindness of Dr. Semon, to the manuscript of the work (then in preparation) I feel inclined to doubt whether any incontestable evidence can be brought forward as to the existence of laryngeal paralysis, due to organic changes affecting the adductors alone." He further says: "From the experiments of Semon and Horsley, it is extremely doubtful whether there is any organic lesion which can produce unilateral paralysis of adduction."

It seems to me that my case, if it proves anything, proves that there was an organic lesion acting for seven years, when a functional disturbance was engrafted and that the cure of the latter had no appreciable effect upon the former. This tells against

Semon and Horsley's experiments, as interpreted by McBride, and rather supports the older etiology.

A singular and interesting fact in connection with the recovery of the voice in this case, I learned recently, and I mention it because I have never seen any reference to the like in literature.

When she regained her voice it surprised her as much as it did her auditors. As she expected to speak in a whisper as had been her wont for eight months, she was greatly frightened at the sound of her own voice, sent for her husband and in the midst of tears told him that she knew she was going to die—that this was a token. Her husband laughed her fears away, telling her the doctor had told her she would again be able to talk. Now comes the interesting phenomenon: after having conversed in a whisper for eight months, on recovery of her voice, it was *impossible* for her to whisper. She tried repeatedly, but each effort to whisper resulted in distinct phonation and clearly articulate speech.

The conclusions which, I think, clearly follow from the notes on the above cases are:

1. That we may have a paralysis of the arytenoideus muscle, due to the most usual cause, viz., acute cold, recover suddenly—just as hysterical cases recover—hysteria being a probable factor delaying recovery.

2. That we may have hysterical aphonia supervene upon an old case of unilateral adductor paralysis, where only weakness of the voice was present, leaving the voice only slightly impaired from the old lesion, the latter being still in force and unaltered as shown by the laryngeal image.

3. That authors differ widely as to the etiology and even existence of unilateral adductor paralysis, and that this field is a legitimate one for investigation, if for no other reason for the sake of rational and in consequence more successful therapeusis.

4. That as long as diametrically opposite views are held by such authors as I have quoted, concerning its etiology, students will be confused rather than taught by the multitude of contradictory statements.

5. That the greatest care should be taken before making a positive diagnosis in all cases of neuroses of the larynx, as the chances of error are numerous, and downright mistakes harmful in many ways.

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HISTORY OF A CASE OF RECURRENT NASAL FIBROMA.

Read in the Section on Laryngology and Otology, at the Forty-sixth Annual Meeting of the American Medical Association at Baltimore, Md., May 7-10, 1895.

BY PRICE BROWN, M.D.

TORONTO.

I must request your forbearance with me, for taking up your valuable time with the report of a single case. We all know how little weight can be attached to individual histories, and that it is only by accumulated evidence that we can be guided to a proper estimate of the value of clinical research. If this is true in reference to surgical practice, it is equally true of a wide range of subjects pertaining to our own special field. Still, there are lesions in which the individual histories are so few and the few so widely spread over time as well as territory that it would seem to behoove every observer to chronicle each instance as it occurs with the hope of adding a fraction, however minute, to the information already possessed. This I am inclined to think is true of nasal fibroma, and as the case I have to report presents several interesting features I trust you will bear with me while I briefly detail its history:

On Nov. 30, 1894, Mr. A. V. P., aged 22 years, stenographer, consulted me about a growth located in the posterior half of the right nasal passage. He was a hemophilia; had had no specific disease. Family history good. Parents both living and healthy. No relatives, so far as he could remember, had been afflicted with malignancy or tuberculosis. Five years ago he discovered a somewhat hard dark-colored growth in the right nasal passage just within the choana. His voice at the time was nasal and it was almost impossible to breathe through the right naris. He consulted a specialist, who snared off a piece. This produced profuse hemorrhage, which, however, soon ceased. At different sittings during the next few weeks the snaring operation was repeated six or seven times; each time the bleeding was severe.

As the tumor seemed to grow almost as rapidly as it was snared away, a microscopic examination was made and the disease was pronounced to be sarcoma. On further consultation with general surgeons, it was advised that a portion of the right maxilla be removed and a silver plate inserted, the case being considered one of malignant disease. This, however, his people declined to consent to, and he was sent to Boston and placed under the care of Drs. Packard and McDonald, of the Homeopathic Hospital. He remained there two months and during that time had several operations performed under ether. The nature of these he could not tell, except that they were intra-nasal, attended by exhausting hemorrhages, and that the nostril after each operation was tightly plugged. At the expiration of the period mentioned he was well enough to return home. The doctors told him that they had removed the whole of the tumor, with the exception of a little piece at the back end of the passage, upon which they did not think it advisable to operate at the time. During the following summer he had for months slight daily hemorrhages, but he spent the season in the country and they eventually ceased. For the next three years he had so little nasal trouble that he did not think professional advice necessary. About a year ago, however, occlusion of the posterior end of the right nasal passage began to return; crusts would form which he found it difficult to void, and slight hemorrhages would also sometimes occur. In November the physician he consulted referred him to me.

The entrance to the right nasal passage was somewhat narrow, but immediately behind it was a wide, open cavity for about one-half the normal depth of the passage. There seemed to be complete absence of the inferior turbinated bone; probably removed by surgical operation in Boston, as already related. About an inch and a quarter from the anterior naris the passage was completely filled by a bright reddish growth springing from the septum, the vault above and the middle turbinated. The attachment on the septal side extended down to the bottom of the inferior meatus. The uvula was very long. Posteriorly, the tumor filled the whole of the nasal cavity. It extended behind the septum, which it seemed to have pressed to the left. On the right it was attached all the way down to the floor of the naris and lay immediately anterior to and continuous with the Eustachian tube. This tube occupied a plane considerably posterior to the left Eustachian, no doubt owing to the pressure of the tumor.

In other respects the health of the patient was of an ordinary character with the exception already mentioned, that he was a hemophilia. He told me that the extraction of a tooth would be followed by bleeding for hours, as also would the slightest cut or scratch.

The question of the best method of operating in this case was difficult to decide. With so extensively sessile a growth, with base concave from side to side, snaring would be impossible, except in small fragments and by following out Ingals' method of galvano-cautery notches, prior to adjusting the snare. His hemorrhagic tendency also seemed to contraindicate treatment by this plan. Curetting, cutting away by knife or scissors also seemed out of the question on the same ground, as well as owing to the

obscurity of the situation. Post-nasally, but a small portion of the growth could have been reached.

Direct surgical operation by excision of the superior maxillary and palatal bones did not seem to be required, as I did not believe these bones of themselves to be seriously involved. There was no external deformity and the only displacement in the pharynx was a pressure downward of the right side of the soft palate. Electrolysis I thought of, but having had no personal experience of its effects in deep nasal work, I finally decided to endeavor to dissect it out, little by little, with the galvano-cautery knife.

On December 1, I did uvulotomy to facilitate post-nasal observation. Two days later, after applying 20 per cent. solution of cocain, I made the first galvano-cautery incision through the anterior naris into the lower part of the tumor at its union with the septum, continuing the burning until the hemorrhage became quite severe. An astringent spray soon controlled the bleeding. Several days later I repeated the operation in the same way, but at the outer margin of the growth at the site of the junction of the former inferior turbinated with the maxillary bone. The hemorrhage this time was very severe and I found it necessary to plug with kite-tailed tampons of absorbent cotton packed solidly within the nasal cavity. This stopped the flow and twenty-four hours later upon removing them, there was no recurrence. After an interval of a week I made the third attempt at galvano-cautery work, incising the central portion between the other two cuts. The electrode was of a bright red heat, and it had only been applied a few seconds when arterial blood began to jet out forcibly. The flow was so rapid that with difficulty I caught a glimpse of a large pulsating artery laid bare and opened by the cautery. It seemed to run across from the septum to the external wall. Having had such a satisfactory result from the previous packing, I again resorted to it. The patient lay down in my office and for a few moments the bleeding was checked. Then it began again, escaping by the posterior naris and soon became alarming. Dr. Reeve kindly came to my assistance and after removing the plug, I packed the cavity from behind by the use of Beloecq's canula, having first soaked the sponges with a combination of tannic and sulphuric acids. This effectually stopped the bleeding, but the patient was almost pulseless by the time it was accomplished, and two hours later, when being assisted to the carriage, he fainted away. This loss of blood confined him to bed for a week, and two more elapsed before he was well enough to proceed with operations again.

On looking up the literature of fibrous tumors of the air passages, I found that Kaarsberg of Copenhagen, in 1894 recommended electrolytic treatment of fibrous tumors of the naso-pharynx, giving the history of four cases, the treatment being supplemented by the use of the galvano-cautery and scissors, and I decided to try it in this case of fibroma of the nose.

After applying a 20 per cent. solution of cocain, as in the cautery work, I used long needles, isolated by rubber tubing, and inserted through the anterior naris into the growth at a distance of about half an inch from each other. These were attached to a 12 cell Le Clanché battery. The séances were about five minutes each, and given upon alternate days.

Notwithstanding the anesthetic effect of the cocain, the shock was very painful, even more so than that of the galvano-cautery. The effect upon the tumor was of a deadening nature, making the surface paler and producing exudation. The shrinkage, however, was scarcely perceptible. After using it through the anterior naris three times, I changed the direction of the electric current, by passing a single straight needle into the tumor from the front, and a long curved needle through the mouth and naso-pharynx and into the growth from behind. This seemed to produce a more satisfactory effect. The central portion, both anteriorly and posteriorly lost much of its vivid hue, though the shrinkage produced by four séances was almost *nil*.

Hoping by this time that the electrolysis would have the effect of limiting the severity of future hemorrhages, I again returned to the use of the galvano-cautery.

From January 18 to March 15 I operated with it at sixteen different sittings, each time applying the cautery as extensively as I thought I could do with safety. Sometimes there was no hemorrhage; at others it was only slight, never severe enough to require plugging. Little by little I got the growth away. The first half of the operations were performed entirely through the anterior naris, the vision of the parts being obtained through the anterior rhinal speculum. The latter half, also, were done through the anterior naris, while the operations were guided by the posterior rhinal mirror.

To complete the work, as the pharyngeal tonsil was somewhat protuberant, I removed it with Gottstein's curettes as a precautionary measure. The bleeding from the cuts was severe, but was checked without plugging.

In the cautery work, the part I found most difficult to accomplish, and requiring the greatest care in manipulation was the destruction of the part of the fibroid attached to the anterior margin of the Eustachian tube.

The supplementary treatment consisted of daily cleansing with alkalin spray, followed immediately by removal of crusts, sloughs, etc., with the aid of cotton holders and finishing with spray of albolene.

I had sections of the tumor examined by a competent microscopist; he pronounced it a dense close grained fibroma.

With regard to the physical condition of the patient, the course of treatment was very satisfactory. With the exception of the time lost as the result of the excessive hemorrhage, he never lost a day from his professional duties. The operations were always done in the evening. Sometimes he would be restless and suffer pain during the following night, but he could always take a light breakfast and go down to his office the morning afterward. During the latter half of the treatment, notwithstanding the amount of cocain used he improved in weight, as well as in color and spirits, and I am glad to say without acquiring the slightest craving for the drug so frequently used.

One notable feature in the history of the treatment was the extent to which the palate resumed its natural functions. At first being pressed out of position it had no control over sprays thrown into the nose, and would allow them to trickle over and to drop into the larynx with paroxysmal coughing as a result. Latterly this accident would never occur, and the nose might be filled with fluid without any escaping into the lower pharynx. In fact, the control over the velum acquired by the patient aided very materially in the treatment of the case, and during this period I exhibited him to the Toronto Medical Society, so that the members could examine the tumor while still in the process of removal.

I have called this a case of recurrent nasal fibroma, believing that the original attack from which the present one must have developed was really fibroma instead of sarcoma. That the former may degenerate into the latter is, I believe, a recognized pathologic fact, but that a malignant growth could be the parent of a benign one, is certainly open to question.

What the future of the case may be it is impossible to say. At present there is no indication of any tendency to return. A new mucous membrane has re-formed. The throat is moist and the voice normally resonant. Still, that it has been completely and finally eradicated seems almost beyond hope. The case, though interesting, is too recent to base a correct conclusion upon, and I shall watch the future history with more than ordinary solicitude.

DISCUSSION.

DR. WARD, of Pittsburg, mentioned a case he had under treatment of a young man about 16 or 17 years of age. About seventeen months ago he suffered from the effect of a large growth in the naris and the incidental symptoms,

obstruction, retained secretions, etc., were quite marked. The growth protruded from the naris and extended backward into the pharynx. He was in a pitiable condition when he entered the hospital. Dr. Ward attacked the growth with the snare and removed it *in toto*. The size of the tumor was fully as great as a hen's egg. Microscopic examination proved it to be a fibro-sarcoma. The hemorrhage during the operation was very profuse, but as soon as the growth was removed it ceased of itself. A few months ago the growth began to develop again and he was sent back to the hospital. What the result will be, it is impossible to say.

Dr. E. Fletcher Ingals, of Chicago, said that he had never had any experience with fibrous tumors in the nasal cavities, but recalled a number of such growths in the naso-pharynx which extended slightly forward into the nasal chambers. He had removed some with the galvano-cautery ecraseur. On others, he had used electrolysis with good results, especially in sessile growths where there was difficulty in getting the loop of wire around their base, and he found that they disappeared under electrolysis. At present he has a little fellow under observation in whom a fibroid tumor began to grow in the naso-pharynx and he had removed it with the galvano-cautery. It subsequently returned, and in six sittings he was able to destroy almost the whole of that which appeared in the naso-pharynx, but it had since extended downward to the malar bone and the nasal chambers. This, he supposed, might be called a recurring fibroid of the nose. It is difficult to decide how to treat these cases, but as he had obtained good results already from electrolysis, he purposed continuing it after returning home.

Dr. Logan, of St. Louis, said that his experience had been in accord with the previous speaker with regard to the prevention of hemorrhage by the use of electricity in removal of naso-fibroma. He employs both the electro-cautery snare and the electro-cautery knife and found them useful both in removing the growth and in checking hemorrhage.

Dr. Cline, of Indianapolis, referred to the case of a boy 16 years of age who had been under his observation during the past year. He had a pretty large growth occluding the nose and extending into the pharynx, perhaps the size of a small orange. The side of the nose was pushed out and the eye was dislocated to some extent. With the galvano-cautery snare he had cut off about one-third of the tumor, which on examination was pronounced a fibro-sarcoma.

Dr. E. L. Vansant, of Philadelphia, said that in regard to the diagnosis of these cases of tumors occurring in the naso-pharynx, as Dr. Brown had raised the point in the discussion, he would make the following observation. He had made a number of histologic examinations in these cases and had come to the conclusion that the diagnosis depends very much on what part of the tumor the section comes from. If it is taken from the outer layer of the growth, you will probably get a very fair specimen of sarcoma, because of the proximity of the mucous membrane and the proliferation of cells near the surface. From a deeper layer you will probably get a very fair specimen of fibro-sarcoma or fibroma. In these cases there are large venous channels which are likely to cause troublesome hemorrhage. In some parts of the growth there may be spots of softening, and sections through them may give the appearance of myxema, myxo-fibroma. These are due to a process of degeneration, the tumor being at first a fibroma, which undergoes sarcomatous change, subsequently myxomatous degeneration takes place, forming cysts in the growth. The fact that these large vessels are formed, explains the hemorrhage, unless the galvano-cautery is used. He declined to say whether the paper had the proper title or not.

Dr. Price Brown in closing, said he was glad that his paper had brought out the history of so many cases. In one respect his case differs from other cases reported; it was a sessile growth over the whole cavity of the nose, springing from the upper part of the septum, the vault above and the middle turbinated body on the other side. He was glad to have his experience with electrolysis confirmed both by Dr. Ingals and Dr. Logan, and especially in regard to its value in reducing hemorrhage. He had some doubts about the correctness of the title of his paper. The growth had been at first pronounced a fibroma by doctors who had seen the patient, and it was regarded as sarcoma when it was removed in Boston. Three years later it came to me and I considered it fibroma. It would be of interest to know if it can be properly called a fibroma if the preceding growth was a sarcoma.

The Chairman—Was the growth after both operations examined by the same men?

Dr. Brown—No, it was not.

STATE MEDICINE vs. FADS.

BY GRANVILLE P. CONN, A.M., M.D.
CONCORD, N. H.

It is often interesting, as well as instructive, to take a retrospective glance over conditions that apparently have taken the lead in shaping popular opinion. In professional work this is quite as fascinating as it is to follow the ordinary topics of the day. In the present, matters that are non-sensational are relegated to the background, giving place to topics that can be made to excite the imagination, and help to create a sensation. Out of this has been developed the fad of being interviewed by a representative of the public press; in which, many times, the person being interviewed is shrewdly made to say what the publishers of the paper or journal believe will be graciously received by its patrons. This seems to have extended to all classes of society until it has become a profession. The ward politician discourses eloquently on the financial problems of the day; the would-be statesman is represented to have decided views upon questions involving international law; ministers and lawyers do not hesitate to boldly proclaim to the world the necessary reforms to save the country, (yet it is rare that any two agree upon the plan of its salvation); the physician and surgeon allow professional work of the most sacred character to be heralded through the columns of the daily press as a consequence of reporters being present at operations, or of bulletins being issued daily, describing the physical symptoms of some prominent patient. In either case, by using the clinical phraseology of the surgeon or physician in charge, the language may be made so effusive as to leave the reader in doubt whether it is intended for the purposes of stock exchange, or for complimentary allusions of a mutual admiration society.

These professional fads have been developed from time to time, and it has always been the province of rational medicine (which is only another name for State Medicine), to assist in showing up what is fallacious and promoting the growth of what is good. State or preventive medicine is doing the same to-day, and to meet these questions successfully must adhere strictly to the truth, or to what can be satisfactorily demonstrated, without recourse to what may be justly denominated imagination and theory.

These conditions have been developing rapidly during the past decade. Conservatism seems to have been lost in the desire to bring before the public matters that would allow a greater range of the sensational, and solid facts have been made to give place to results that have been illusionary in their character.

In our professional work, preventive medicine may not seem so brilliant as surgery, nor so seductive to the general practitioner as the administration of drugs, yet the fact that a life may be saved without the intervention of either the knife or a drug, is a most gratifying result to the average human being. The advanced position that surgery has taken since the close of the late war, has been almost entirely along the lines of hygiene. The Army surgeon was oftentimes brought in contact with much that was suggestive, and with the broad and brilliant mental capacity which he must necessarily have in order to succeed, saw much appear that he would wish to improve. The unfortunate surroundings, the

unhygienic condition of the person, the immense amount of practical surgery that must be done in a short period, and that under the most depressing conditions and without adequate supplies, all tended to awaken in the mind of the thoughtful physician and surgeon the idea that something was needed to complete a good work, and make success the rule rather than the exception. In this long struggle from 1861 to 1865, it did not take but little time to educate the surgeon to the fact that cleanliness was the foundation stone on which rested the art of surgery. As a result, Listerism, Pasteurism, and various other "isms" began to assume vast proportions soon after the war closed. Like a great many other things, it was considered so commonplace to be clean that it was overlooked, and, therefore, when brought into prominence, the pendulum swung to the other extreme and a variety of terms were used to express the hygienic conditions imposed.

I well remember, about 1871 or 1872, of attending a convention of the Connecticut River Valley Medical Association, at Bellows Falls, Vt., and meeting Dr. H. D. Holton, of Brattleboro, who had arrived home within a week from a long visit in England, where he had passed considerable time in the hospitals. He came back imbued with the idea that Listerism was the all-important adjunct to surgery. In somewhat lengthy and interesting remarks before that Association, he went into details of the work as performed by Mr. Lister, and dwelt particularly upon the fact that all the operations were performed under spray. He was particularly emphatic in that especial factor as having such wonderfully good results whenever an operation was being performed, and especially in abdominal surgery.

I remember very well that at the close of his remarks, the late Professor Phelps of Dartmouth College, who was sitting very near, and who gave him undivided attention during his whole discourse, rose up and taking him by the hand said: "Brother Holton, you have got it bad, but thank God, it isn't a fatal disease. Listerism is having its day; but we shall all live to see that it is simply a matter of keeping the patient clean." Professor Phelps has passed away. Dr. Holton is still doing good work, and is not obliged to use the spray in order to keep his patient clean.

It is unnecessary to remark that surgery has made most wonderful strides within a few years, and we naturally ask the reason for this great advance. We are told that it is due to the practical use of asepsis. Now the term "aseptic" does not mean near so much to me as does the good old Anglo-Saxon phrase of "being clean."

The terms sepsis, antisepsis, disinfectant, disinfection and a host of other such phrases have been sprung upon the profession by the chemist and the pharmacist who have had something to sell, and consequently were always ready to assist the most conservative members of the profession by loading them down with various compounds, labeled with unpronounceable names. These chemic compounds may have their use, and at certain times may have some influence in overcoming what would otherwise be septic, but to my mind true cleanliness which can be brought about with soap and water and a scrubbing brush, is necessary before we place our faith in any of these compounds.

In the hygienic conditions involving a surgical operation or a surgical dressing, we should always demand true innocence instead of repentance, for repentance of the evils done in this world does not benefit the victim of a polluted water supply, contamination of food, nor of the consequence of preventable septic poison. Good may come to others from such teachings, but to the friends of the victim a life is sacrificed to ignorance or stupidity, for it might have been different had there been proper care exercised.

A few weeks since, under the head of "Up-to-Date in Surgery," the *British Medical Journal* said in a rather sarcastic way: "Modern surgery is heroic enough to please the grim prophet of hero worship. It seems to have taken Danton's motto, which in English would be rendered, 'audacity, audacity, and still again audacity.'" This calls to mind the language of that most estimable wife of our distinguished compeer, Dr. John G. Blake, of Boston, who, when traveling through the mountain passes and canons of Colorado and New Mexico, and asked her impressions of the scenery, replied: "I don't know which to admire the most—the royal grandeur of nature, or the audacity of man as exhibited in the extraordinary feats of engineering skill." So, with the surgical work of to-day, we are sometimes at a loss to describe our feelings as to which we admire the most; the physical beauty of God's creation, or the audacity of man in his defense of the physical body against disease.

Continuing the quotation from the *British Medical Journal*, the writer says: "Almost every week one hears of some surgical Alexander cutting his way to fresh conquests. Is it not unnatural, therefore, that nearly every ambitious surgeon should see in the knife his '*In hoc signo vinces?*' In the hands of a skillful operator the knife doubtless can work greater wonders than the fabled wand of the magician, but it should be reserved for difficulties worthy of so noble a weapon. As Falstaff says of the English nation, it may be said that it was always the trick of our profession, if they have a good thing, to make it too common. We can not help thinking that the knife is made a trifle too common . . . . ."

Again he says: "This is quite in the spirit of 'advanced surgery,' which, in the words of one of its chief professors, thinks no more of opening a patient's abdomen than a man does of putting his hand into his pocket. Is the day coming when a cold in the nose will be dealt with by Rouge's operation, and bronchitis treated on 'surgical principles' after preliminary opening of the windpipe?"

This is strong language, and yet to some extent it is worthy of our consideration, as at the present time there is a great predisposition for some people to become wedded to fads, and just now surgery, especially that of the cranial and abdominal cavities, seems to take the lead in the profession. With the improvement and advancement made in the hygiene of such work, the opening of these cavities has become nearly or quite without any expectation of harmful results. It is a matter of congratulation that every member of the profession should be allowed to have the ambition to go forward and perform all manner of operations; yet, on second thought, we must admit that only a comparatively few, in a sparsely-settled country, can become experts. Continued and daily practice becomes a necessity for good work, especially where delicacy of

touch and manipulation are required. The same is true in regard to the hygiene of an operation, in order to prevent contamination or sepsis. It appears to me sometimes, that we are prone to give our attention almost entirely to the opening of cavities, especially so far as the prevention of sepsis. Our books and our journals are full of instructions, especially in the opening of the cranial and abdominal cavities, and while they give you some general instructions regarding the minor operations, yet they are comparatively silent on such matters as are of daily occurrence to the profession at large.

It is only recently that I have observed in text-books or in journals any allusion whatever to the preparation of a patient for so simple an operation as vaccination, as it is generally understood that everybody must know how to vaccinate. In fact, it has become so common that the laity themselves think they can do it just as well as physicians, and all of us have had experience with that class of people. I believe the time is coming when by the use of preventive measures the operation for vaccination will be made one of importance, in which the arm, clothing and the surroundings will be made as nearly perfectly clean as it is possible. I have remarked to medical men and others that if we would approach a child who was to be vaccinated, and prepare the arm and the clothing and all the surroundings with the same care that we would if we were going to open the abdominal cavity, we should have far less trouble; there would be far less complaint of sore arms, and the possibility of other troubles, aside from the vaccine virus taking hold of the system of the patient. It is not my purpose to speak particularly of medicine or those auxiliaries of surgery beyond that of preventive means relative to surgical operations. I have great respect for the pharmacist who has been of value to the profession in bringing certain things to our notice, but I object to his assuming that we can not get along without him. The truth is, this work of advancement began and was made possible by our professional knowledge of hygiene. For some years before 1861 there had been but little advancement in surgery, which at that period was almost entirely confined to the extremities. Suppuration was the rule, and although the text-books taught that we might get union by first intention, yet they signally failed to teach us how it could be achieved. A good story is told of a surgeon and house officer of the period of 1870, and the same again in 1894, which runs as follows:

In the year of our Lord, A. D. 1870. Scene: surgical ward.

SURGEON: How is Jones doing?

HOUSE SURGEON: Extremely well, sir; the wound is suppurating nicely.

SURGEON: That's all right.

Time: In the year of our Lord, A. D. 1894. Scene: same surgical ward.

SURGEON: How is that amputation of the breast?

HOUSE SURGEON: I'm sorry to say, sir, the wound is suppurating.

SURGEON: What! Suppurating! Do you say suppurating? Well I'll be ———.

It is true that McDowell and some others had opened the abdominal cavity, but in doing this wonderful operation they had brought down upon their heads the scorn and the abuse of the majority of the profession, for they had utterly failed to give any reason why such operations could be safely performed. While hygiene was known to be as old as the world itself, its simplicity was so universal that it had fallen from its high estate and had become one of the lost arts. It is to be remembered that in Holy Writ, we find in the law of Moses, much that pertains to hygiene and sanitation, and I sometimes wonder if it is because we find those matters in the Bible that so few seem to know that they ever existed. But whenever we look this matter over and come down to the vital principle, we are always confronted with the same thing, viz., that cleanliness is the foundation of all good surgical work. No matter how much we may have of carbolic acid and various other drugs and chemicals which are put upon the market and advertised largely, without cleanliness, without soap and water and the scrubbing brush, we shall utterly fail of doing good work. These are the hygienic measures on which surgery depends, and without which surgery would soon fall back to the low estate which it had prior to 1860. The most of the compounds which are placed upon the market are empirical in their character, and cost out of all proportion to the good work which they may be expected to perform. I am always suspicious of any man or physician who indulges in rhapsodies over some new medicine or compound. We should look out for him. He will bear watching carefully, for he may be but an advance agent, and is talking for the money in it, the same as the advance agent of a circus, or any other advertising agent. Many drugs and surgical supplies are advertised in our medical journals in which we have no confidence, and while there may be members in the profession who use them, yet it is generally expected that the public will purchase, rather than the profession. The advertising which some of these compounds get is simply ridiculous, and should not be tolerated by any member of the profession, or even any person of common sense.

The following item regarding a wonderful medicine is taken from the *New Idea*, and is presented you as an illustration of an extravagance in language that none but a mountebank or charlatan would assume, and yet it is only in a line with the exalted conditions the commercial traveler, representing manufacturing firms, would have us believe, and should we venture to express doubts regarding the infallibility of their compounds being as efficacious as their expression of confidence would lead one to expect, they seemed pained at our ignorance; and sometimes actually intimate or insinuate that you are but a back number. The item was as follows:

"Chetterback's Balsam of Balsams. Nature's Palladium. Should you chance to have your brains knocked out, or your head chopped off, two drops of this seasonably applied will recall the fleeting spirit; reënthrone the deposed arch; cement the discontinuity of the parts, and in six minutes' time restore the lifeless trunk to all its pristine functions, vital, rational and animal."

To which the editor comments as follows:

"A full bottle of this will also make a sausage wag its tail and bark, and a jar of extract of beef, bellow or give milk."

Barnum once made the remark that the public loved to be humbugged and the suggestion has been acted upon by the maker and vender of patent medicine for many years.

Fortunes have been made, human beings have been

drugged, and the constitution of future generations has been impaired, until the philanthropist and the reformer should at least class this evil with that of intemperance.

It is not strange that the manufacturer of pharmaceutic preparations and surgical supplies, in the sharp competition of business, should fall into the same line, and shrewdly making use of the profession to bring out his products, be able to build up large business plants, and from his profits rival the dealer in patent medicines, in the elegance of his mansions. The physician and surgeon should always think for himself. The profession should direct public opinion on all matters of professional interest, instead of having it brought round in the grip of a commercial traveler. The surgeon should never confidingly allow the use of some compound when he is not thoroughly informed of its chemic constituents. We know that absolute cleanliness, with abundance of dressing made absolutely aseptic by the great cleansing power of heat, will prevent infection from without, and give our patient every chance from the possibility of auto-infection from within.

One other matter I would like to bring to your notice. It is true it has not thus far been intruded upon the surgeon to the extent that it has been upon the physician, but I anticipate that ere long some bold disciple of the commercial travelers' union will come round to our office with a gripsack full of samples, for the relief and cure of such a variety of surgical diseases, "that," using his own language, "no reputable surgeon would ever be without a large stock ready for immediate use." The following from the pen of one of our profession, ever ready to meet imposition in every form, with ridicule and pungent wit, will serve to invite serious thought and investigation into a class of remedies that is being heralded to the world with all the brazen effrontery of empiricism. I give it to you as only a partial list of extracts:

> "An extract of muscle for rheumatic pains,
> A gray-matter extract to nourish our brains,
> An extract of teeth for a man that can't chaw,
> A maxillary extract to cure lock jaw,
> An extract of ocean to cure mal-de-mer,
> A hirsute extract for those without hair,
> A duodenal extract to serve a good turn,
> In healing the ulcers that follow a burn,
> An extract made out of a whole population,
> To rescue some housewife from sterilization."

Medical journals wielding considerable influence in the profession, unblushingly open their advertising pages and with sensational head lines intimate that any one who reads can be raised from the depths of despondency, if they will only send for these specifics. To the reflecting mind it seems as if any educated person would at once distrust such dogmatic assertions, yet in the present, it is becoming a fad to follow the bacteriologist and the biologist through the devious pathways of the laboratory, and accept the diagnosis of the culture tube without question.

True scientific investigation and its deductions should be the admiration of every member of the profession, but do not be in such hot haste to accept conclusions as to overthrow and trample upon such common sense opinions as have been set forth by State Medicine, as well as the axioms and aphorisms of the science and art of medicine and surgery that have been in the past and must be in the future, beacon lights to guide professional opinion, thereby avoiding the dangerous shoals of dogmatic assertion and empirical insinuation.

The bacteriologist and biologist are doing good work, but many of those performing the most labor in this department are not practical physicians and surgeons, and therefore do not test the results of their own study. Should such students become enthusiastic and fascinated over the secret processes revealed through the culture tube and the microscope, will it be always safe to follow in their lead without something more than theoretical assurance? I have great respect for newspapers and medical journals, as well as for the enterprising men who serve as the medium of communication between the people of different sections of the world, yet they oftentimes defeat a good object by prematurely bringing before the public the work of the scientist. Less haste and more conservatism would develop less fads, but more real science. The sensational might be far less prominent, but real worth would be a solace to the profession.

A summary of this paper may be concisely stated in a few words:

Always investigate for yourself. Do not allow "'isms" nor fads to become a part of your daily prescriptions. Hold fast to that which is good, and promptly discard all that will not bear a searching scientific investigation, under a light as strong as the noonday sun.

And lastly with a thorough knowledge of hygiene, therefor fully realizing the powerful influence of State Medicine in counteracting the deleterious effects of fads and theories that are but a figment of the imagination (fostered by minds already dazed by an all-absorbing desire for pecuniary gain), we should not forget that in surgery we have in absolute cleanliness the true foundation of practical success.

THE NATURE OF A DELUSION.

BY J. SANDERSON CHRISTISON, M.D.
CHICAGO.

My article entitled, "The Essential of Insanity," which appeared in the JOURNAL of October 19 contained an argument supporting the proposition that "where there is no delusion there is no insanity, for the mind that is competent to comprehend facts and their bearings within the scope of its education and the limits of ordinary surroundings is a mind capable of correction on any error; and conversely, a mind that is not thus competent must of necessity beget delusion of one form or another which it is as incompetent to discharge, no matter what the evidence combating."

Since the presentation of that article for publication (last spring) I find in the present autumn number of *Brain*, p. 328, the following words of Prof. C. Mercier, of London, in his discussion of a paper by Dr. Batty Tuke. Dr. Mercier expresses his gratification at Dr. Tuke's complete acceptance of the doctrine, which, says he: "I have long held and preached but which has never before, as far as I know, had any adherent; that insanity and disorder of mind are not convertible terms and that disorder of mind—grave and prominent disorder of mind may exist in a sane person and without the question of insanity being even raised."

When two such authorities so enunciate, I think I am very nearly cleared of heresy in my proposition and believe the day is dawning when doctors on the

stand will be less confused and confusing on the subject of insanity.

In the same article, I also asserted that a delusion had three components or elements of aberration, viz., 1, error of fact; 2, error of inference; and 3, illogical tenacity.

1. The basis data or premises of a delusion are not all true and they are not necessarily all false, but must contain some error or illusional feature or hallucination in any case. This is evident from the law of association which requires at least one quality or idea for a leader to bring others into a particular relationship, fitting or false, otherwise an inference or delusion could have no attachment and therefore no existence. The error may be supplied by the senses or the imagination or may exist subconsciously, as when the delusion takes the form of a feeling or emotion or impulse.

If the law of the association of ideas were inoperative chaos would result, and if only partially operative as in the delusional state, the same result would take place, viz., error of fact, as we would have jumbled facts—or facts in malposition giving erroneous perceptions. A part truth is an untruth. But the law of association more or less prevails except in recollection which is a voluntary act and is necessarily affected owing to reduction of will power. Memory, which is technically the term for the conservative faculty, but is also used to mean the involuntary return of ideas to consciousness through natural or habitual association (as in the lower animals), continues comparatively unaffected as it is operative in all passive states of mind, not preoccupied.

Again, as the mind is a unit (its faculties being but interdependent modes of activity) and as it is the same faulty mind which perceives the basis data that conceives their relationship, it is evident that to suppose it correct in the one case and not in the other is to assume that an insane mind can be sound and unsound almost simultaneously.

Everyday things and things that are common; habits that are automatic or almost so from repetition, and arguments or reasonings that have become habitual or familiar, are less likely to be affected than those requiring consideration or of recent acquisition and thus much of an insane person's behavior and talk may be quite normal or even smart. Accordingly much of the basis data of a delusion may be true with one or more of the less familiar facts distorted through imperfect attention, or an entirely false one may be obtruded by hallucination.

2. That a delusion also contains an error of inference—an illogical deduction from the data as they appear to the subject, is evident from the last reason given for error of data. If the mind is accurate in perception there can be no basis for a delusion and therefore no delusion; and conversely, if it is accurate in inference, it is capable of being accurate in perception and the delusion would dissolve as is the case in restoration from insanities.

3. By illogical tenacity I mean the irrational persistence of the delusion in the face of positive and contradictory evidence sufficient to refute, so that the delusion is maintained, not because of ignorance—which is chiefly the case in common or simple delusions—but because of volitional inability to direct the mental operations beyond the ideas as they appear to the subject. In other words, the attentive power of the mind has become subjective to elementary details rather than the associating principles and, as a consequence, the last conception is retained simply from the lack of the cerebral energy requisite for a progressive mentation which would give the correction. A patient may argue rationally along lines of previously established habit on common knowledge even with reference to a delusion, the birth of which may only be accounted for in the same way that we account for an intuition—a subconscious action of previously acquired ideas true or false.

CONFUSION, EMOTION, IMPULSE, FEELING.

Psychologically, I do not distinguish any essential difference between what are called insanity of conduct (a form of hysteria); insanity of feeling (impulse); moral insanity and such a distinctive form as homicidal mania. The subjects all, to a certain extent, know what they do at the moment of committing a crime. But when not shamming they are impelled to their acts by the domination of a delusion which they can not overcome. Whatever is not purely automatic is more or less a conscious act (even including somnambulism and hypnotism to a limited extent with forgetfulness following) and as such, must be the product of an idea, right or wrong, distinct or confused. If all intellection ceases, what is to direct or move the hand and foot? The will can not act without an idea, no matter how perverted the mind may be. The nervous individual who ascends to a giddy height and experiences an impulse to jump from it, should he jump is impelled by the delusion that he must do so, which is insanity, as the facts facing him confute the necessity for the act.

That a correct minded person should become possessed (as many allege) with such a feeling, notion or impulse, whichever you choose to call it, and be actuated by it, is simply inconceivable. In cases of such extraordinary morbid feeling there must be an existing cerebral perversion—a delusional basis which breaks from its last thread of reason by the strain of the situation which may focus the ideational confusion into a delusional impulse, but which may have had a previous conscious existence. I have never heard of any one jumping under such circumstances except suicides. But we occasionally meet with persons who have experienced such alarming neurasthenic feelings but managed to control them as the normal will still ruled.

Confusion, feeling, emotion and impulse are simply degrees of ideational activity without a corresponding degree of self-control, and thus the delusion existing may be indistinct.

The moral crook (kleptomaniac, pyromaniac, etc.) who keenly appreciates his unenviable predicaments, is another neurotic who may have a dominating delusion, although in some cases acquired as a habit and only at times or periodically in action. Like the hysteric or epileptic, his conduct has a motive idea or cause that is often obscure and perhaps immediately forgotten after the act, but none the less insanely delusional for the time being.

A Sure Testimonial.—From the New York *World:* Patent Medicine Agent: "Madam, did your husband use the bottle of Professor De Fakir's Animal Extract I left him?"

Wife: "Yes. It took immediate effect."

Agent: "Good! Then you can conscientiously say that he will use no other?"

Widow: "I'm quite sure I can. He is dead."

NEW INSTRUMENTS.

AN AURAL MASSEUR.

BY FRANK ALLPORT, M.D.

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MINNEAPOLIS, MINN.

The question of the benefits derivable from aural massage in middle ear affections is still unsettled, but many advocate its employment. Improvement doubtless occurs in some cases under its influence, and the necessity for a good, efficient, cheap and handy instrument is apparent. These merits can all be obtained in the appliance here described, the principle of which was suggested to me by my friend Dr. W. N. Porteous, of this city.

The instrument consists of a piece of thick rubber tubing one yard in length, of dark color, to prevent soiling. The tubing is severed in the middle, and some glass tubing inserted to connect the two ends. In this glass tubing is loosely placed some cotton. The object in thus inserting the glass tube and cotton is to insure cleanliness to both surgeon and patient, as it prevents anything passing from the patient's ear to the surgeon's mouth, or *vice versa*. As the cotton is apt to pass out of the glass tube during the massage treatment, it would be better for the surgeon to fasten it in the tube by a drop of mucilage. On one extremity of the tube is impressed the word "Mouth," showing that this end is for the surgeon's mouth. This extremity is also fitted with a hard rubber mouth-piece. The other end is impressed with the word "Ear," showing it is for the patient's ear. The rubber is here left free and soft, as it can thus be best fitted into the meatus and its insertion is unaccompanied by pain.

When it is desired to use the instrument, one end is securely placed in the patient's meatus and held there by the surgeon. The other end is put in the surgeon's mouth, and suction applied as weak or strong as is desired. By sucking in and out, as it were, a vibratory movement of the drum-head and ossicles may be obtained, which can be continued as long as is thought proper—but a minute or so will probably be sufficient.

Care must be taken not to proceed with this application too vigorously, as great force may be obtained and unfortunate results produced, such as a rupture of the drum-head, blood blisters in the meatus, etc.

SELECTIONS.

Report of 1,000 Goitre Operations.—(Kocher, at the twenty-fourth Congress of the German Society for Surgery, April, 1895.) When Kocher presented to the Congress the report of his first 100 operations twelve years ago, he pictured clearly the strumous cachexia. In the last 900, never has the strumous cachexia been presented, except in one case. After deducting the malignant cases, which demanded complicated operations, out of 870 cases only 11 died, and this number includes such cases as were *in extremis* on admission to the hospital. Five deaths were not directly chargeable to the operation, three were cases of Basedow's disease, the latter showing the justice of Mikulicz's decision that the operation is more dangerous in Basedow's disease than in simple struma. Therefore in such cases Kocher disregards complete excision and is satisfied with a ligature, and ties only three arteries. In one case in which four arteries were tied, tetany set in immediately. Of the simple, uncomplicated cases only three died. In the last 900, there was no death from chloroform; in the first 100, one. One case of bronchitis from ether with fatal outcome is noted. In general the anesthesia was started with chloroform and continued with small doses of ether. With severe dyspnea it is better to operate under cocain, which is well borne. Only two deaths were due to infection, and both were secondary operations. There was one series of 272 operations without a death. Although these favorable results fill us with pride, yet the patients would be more thankful and it would be a triumph of science, if the prevention and cure of goitre could become merely a question of rational nourishment. The researches of Kocher's assistants, Lang and v. Trachevsky, have now shown that long-continued thyroid feeding will diminish the size of a goitre and even bring on a condition of atrophy, so that the danger lies in abolishing the function of the thyroid. Though these experiments were carried out on animals, yet they are important. Kocher has, in connection with v. Trachevsky, extirpated the thyroid in pregnant animals with the view of ascertaining whether fetal cretinism can be produced. And in fact rachitic young have been born. Further, v. Trachevsky has demonstrated that atrophy of the thyroid can be induced by administration of phosphates. And already Kocher has shown that a rapid improvement in Basedow's disease follows treatment with sodium phosphate. v. Trachevsky draws the conclusion from this that the condition of the thyroid stands in close relation to the amount of phosphate in the human body. And the assumption is not far removed that the growth of a goitre can be influenced definitely by suitable feeding. In proof of this Kocher has shown two photographs of a man (before and after treatment with thyroid juice) in whom a colossal struma completely disappeared in one and one-half years under purely dietetic treatment.—*Centralblatt für Chirurgie*, July 6, 1895.

Thyroid Feeding for Syphilis.—From the military hospital at Warsaw comes the account of the internal use of fresh thyroid gland from an ox in a severe case of secondary syphilis which had not improved under mercury and iodid of potash. The thyroid was cut into small pieces reduced to a pulp and fed to the patient with bread, butter and salt. Improvement began on the third day. The deep ulceration of the nose and ear soon healed. Temperature fell, appetite improved, and weight increased. There had been great emaciation. The patient complained at first of nausea, palpitation, and trembling of extremities, and the pulse rose to 120, but these symptoms disappeared. The dose at first was 2 grams, with a daily increase of 2 gm. until 14 was given, and the treatment was omitted every third day.—*Wiener klinische Rundschau*, Sept. 15, 1895.

Autoscopy of Larynx and Trachea (examination without mirror).—Kirstein applies this title to a method of direct inspection of larynx and trachea by the eye alone, and he insists that it is possible in many cases even as far as the bifurcation. After application of cocain to pharynx and epiglottis, the patient is placed in the horizontal position with head hanging over the edge of the table. The autoscope is a short, thick semi-cylindrical instrument, joined at a right angle with a Casper's electroscope. This is introduced into the mouth, moved along the posterior wall of pharynx to the level of cartilages of Santorini, then pushed forward by a quick upward movement, by which the tongue is pressed forward and the epiglottis raised. Now under favorable electric lighting the larynx and trachea can be directly inspected, and the autoscopic picture is far superior to that with mirror.—*Wiener klinische Rundschau*, July 21, 1895.

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SATURDAY, NOVEMBER 16, 1895.

THE PASSING OF HYPNOTISM.

Hypnotism as a therapeutic agent is now having its day in regular medicine, but it is a day that is probably well past its meridian. The belief that it has its dangers and that these overbalance its possible benefits has grown within the past few years, and the number of regular physicians who use it in their practice is probably very markedly on the decrease. It is legitimate to utilize pathologic conditions and even to produce them in therapeutics, but it must be demonstrated as of utility on reasonable *a priori* grounds, or, at least, have the best of clinical and experimental evidence in its favor to make it expedient or justifiable. When, with a better knowledge or theory of the condition the *a priori* deductions tend to its disfavor as a healing agency, only the most decided clinical proofs of its value, applying not only to immediate but also to remote results, should be required before its use in the treatment of disease is countenanced to any extent.

The revival within the past sixteen years of interest in hypnotism, the claims of the Nancy school and the published accounts of the experiences and practice of numerous physicians and scientific men of repute such as FOREL, VOISIN, BENSWANGER, BRAMWELL, and others, have given it a certain status in legitimate therapeutics, considerably beyond what it possessed in its former period of cultivation some fifty years ago.

It is probably not known to the general medical public of to-day, or if known is forgotten, that at that time it had its popular pseudo-scientific standing and was investigated by men of science, who came to very much the same conclusions as those of the present day. This fact has been well shown by DR. J. G. KIERNAN in a paper published in the *American Journal of Insanity* at the beginning of the present year; he shows that the earlier alienists of this country recognized the dangers of hypnotism, its psychologic basis, and the element of morbidity that is required to predispose to susceptibility. The outcome of the whole at that time was to relegate it back among the pathologic curiosities of little practical value, and it slumbered, in a medical point of view for over thirty years.

It seems probable that we are to see history repeat itself, and that before many years the medical profession will drop hypnotism as a therapeutic agent, at least, that will be the general if not the universal rule, and that its use will be mostly confined, as it was during the years between 1848 and 1880, to the irregulars outside of the recognized schools of medicine. That is its tendency at the present time, and while some unquestionably able men are still experimenting with it, a too great credulity as to its value and powers has seriously injured some high scientific reputations, that of LUYS of Paris, for example, among others. We need not particularize here on what may be rightly called the thoroughly disreputable therapeutics of hypnotism, as applied by certain prominent German physicians—they have before been editorially alluded to in the JOURNAL.

The dangers of hypnotism are already indicated, when we consider its close relationship to hysteria and to hysterical conditions which has been shown by CHARCOT, GILLES DE LA TOURETTE and others in France, Germany, and elsewhere. Of all pathologic conditions hysteria would seem to be one of the least likely to be therapeutically useful, and the utilizing of hysteroid anesthesias and other disturbances of consciousness, going so far, even, as to the production of what may perhaps be properly called epileptoid conditions of double consciousness and amnesia, without regard to the after effects of such disordered cortical functioning, is not a procedure that ought, it would seem, to be countenanced as a legitimate method of treatment of any condition; a condition, moreover, in which the will is in abeyance is not a normal one and its tendency must be to weaken the inhibitory power of the brain and change its functions, possibly even to the extent, in some cases, of producing serious mental disorder. As HACK TUKE mentioned, some thirty years ago, hypnotic conditions have in a fashion something of the character of an induced temporary insanity, and their too frequent repetition may make the derangement a permanent one. Such has undoubtedly been the case in not a few instances, to say nothing of the aggravations of hysteria and even the production of epilepsy in some cases. The dangers of hypnotism are real, and the fact that the majority of the victims escape the worst of them, does not in any way excuse the reckless ex-

perimentation that is sometimes carried on for ostensible therapeutic ends. If the major hypnotism, or that which commonly goes under the name and is attended with marked disturbances of consciousness, has even any utility in treatment, it must be a very limited one and the chances of its doing mischief greatly outweigh its advantages.

It may be asserted the interest in the subject has been to the advantage of the profession, by calling attention to the therapeutic value of suggestion, and, to a certain extent, this claim may be allowed. It has not, however, increased our practical knowledge in this direction; it has only led to a possibly wider recognition of the advantages of suggestion by the regular profession. The legitimate use of suggestion is, however, quite as different from hypnotism as the latter is generally understood and practiced, as it is from its illegitimate use which leads directly to quackery.

TEMPERANCE INSTRUCTION IN PUBLIC SCHOOLS.

For many years there has been an increasing conviction that physiologic instruction of the danger and injuries from alcohol and other narcotics, in schools was the most practical way of lessening the evils of drinking. In accordance with this, laws have been passed in Congress and forty-one different States making it obligatory to teach physiology and hygiene, using such works as have special reference to the effects of alcohol and other narcotics on the human body. Books have been prepared to meet this demand, which have passed the severest criticism, in both Government and other schools.

Evolution and elimination has weeded out all but a few series which have been edited by several eminent medical men. Sweden, Norway, Spain and recently France have taken up this work, and some of these books have been boldly translated and adopted in the private schools of these countries.

The French Department of Instruction has urged similar compulsory laws by the Government. A law of this character which was passed in New York ten years ago, was amended last winter and made compulsory, requiring all schools to give four lessons a week for ten weeks in physiology and hygiene. This law was passed without a single opposing vote and signed by the Governor and is identical with the laws in other States.

Now comes a phase of history which is repeated along the same lines in every advance of science. The superintendent of public instruction in New York discovers that this law is dangerous and impractical, and that the text-books are full of errors and misleading. A bishop and theological professor make the same discovery, and a battle opens with much sound and fury. The superintendent asserts that no children can be taught concerning the evils of alcohol, opium, tobacco and other narcotics, unless they have some knowledge of chemistry. Even then, if this teaching is not in accord with the theories and practice of parents, it is useless and dangerous. He is very confident that alcohol is a food, and useful stimulant, and indispensable when used in moderation; also that all contrary views are unreasonable, fanatical and opposed by all science and good judgment. He finally urges that the law be violated and every means be used to have it repealed.

Opposed to this, it is asserted that the law has been found practical in the government schools at West Point, Annapolis, and other places, and in all the forty States where it is in operation, it has been warmly supported by leading instructors, from the Government Commissioner of Education down.

The disputed questions of alcohol are said to be so far settled, that certain facts can be taught with great confidence and accuracy. Particularly hygienic and practical truths along the line of daily experience. It is also asserted that the evils from spirits and other drugs can be made clear to all school children, in the same way as other truths of physiology. Such teachings, along with other physiologic facts are of inestimable value in the future history of the child.

The authors and publishers of these text-books invite the closest criticism concerning statements alleged to be untrue, and promise to make corrections in every instance. Among these authors, are DRS. MARTIN, PALMER, TRACY, STOWELL, and others who are or were, not only practicing physicians but teachers in medical colleges and who have given special care to both the facts and manner of presentation. Into this curious controversy some medical men have been drawn, and a decided "Donnybrook Fair" appearance, is presented.

The political methods of the superintendent of schools to have this law repealed, are on a par with those of Tammany Hall. Appeals to public sentiment to prove the truth or error of questions concerning alcohol only result in confusion, particularly when the facts at issue can only be settled by appeals to science and medical men. The questions in controversy are these: are the statements concerning alcohol and other narcotics in these school text-books, true? and, if so, can they be practically taught in public schools?

If these books contain errors, it would seem to be an easy matter to point them out in the State of New York, with its great centers of medical science and learning. Another rather interesting query is suggested: have all the Legislatures of forty-one States, together with Congress, the President, and various Governors who have passed and signed these bills all blundered? Are they all temperance fanatics and wild enthusiasts? Some of the authors of these books were never recognized as extremist or temper-

ance cranks. Have they all blundered and committed themselves to gross errors? We shall watch this battle with some interest.

SOME NEW LIGHT ON THE CAUSATION OF IDIOPATHIC TETANUS.

To those who are brought into contact with clinical and experimental tetanus in the bacteriologic laboratory, the older theories which attempted to account for the disease appear ridiculous enough. One has only to read the chapter on traumatic tetanus in a text-book on practice of medicine, issued even as late as ten years ago, to see some theoretical curiosities in the efforts made to explain the etiology of the disease from the purely clinical side. The discovery and isolation of the tetanus bacillus by NICOLAIER and KITASATO, and the separation of the tetanus toxin, have given experimental pathologists a rational foundation for their work upon traumatic tetanus, and enough clinical and experimental study has now been made to set aside all doubts as to the part played by the specific parasite in this disease. Upon the demonstration that the tetanus bacilli gained entrance at the seat of traumatism and here produced their deadly toxins, the etiology of ordinary wound tetanus was set at rest. On the same principle, tetanus of the new-born and tetanus of the puerperium can be explained by looking upon the umbilical cord and the open uterine sinuses respectively, as the gateways of infection.

Those forms of tetanus, however, in which no demonstrable wounds could be discovered, that is, the type of this disease known as idiopathic or rheumatic tetanus, have still eluded the efforts of the pathologists who have attempted to discover their etiology; and a great deal of discussion has arisen as to the relations of the idiopathic and traumatic tetanus. Experimental evidence of a positive nature in relation to idiopathic tetanus has been slow in coming, and it is therefore a matter of considerable importance that we are now able to point to a very pretty and successfully executed investigation bearing on this point.

The work referred to has just recently been published by CARBONE and PERRERO,(*Ueber die Aetiologie des rheumatischen Tetanus. Centralblatt für Bacteriologie und Parasitenkunde*, XVIII Bd., No. 7, Aug. 31, 1895, pp. 193–201) and these investigators had the rare fortune to discover, in a case of rheumatic tetanus with no demonstrable traumatism, the *tetanus bacilli in the inflamed bronchi.*

The patient presented himself at the hospital with a negative previous history. No record of recent injury, but with the statement that he had shortly before his illness been exposed to a severe rain-storm. He exhibited pronounced symptoms of tetanus, together with those of bronchitis, upon his entrance to the hospital, and the tetanus gradually increased, until death occurred in three days after his admission. At the autopsy, no visible wound could be found on the body after careful search, save a little scratch on one ear, and the crust from this wound, implanted into white mice, showed no tetanus bacilli. The important gross lesion was a rather intense bronchitis, and from the exudate contained in the larger bronchi on the right side, a series of white mice were inoculated with the production of typical experimental tetanus, and with the recovery of a tetanus-producing pus from the seat of inoculation in these animals. Culture experiments made with the bronchial exudate were also successful, though some trouble was experienced in isolating the tetanus bacilli from the diplococcus of pneumonia with which they were intimately associated. A pure culture of the tetanus bacilli could only be obtained on plates of acid gelatin, and the organisms thus isolated were no longer virulent. The whole study was carefully executed, and no doubt can remain after reading the authors' account that in their case of rheumatic tetanus, the bacillus of NICOLAIER found its focus for infection in the bronchi which were already the seat of an acute inflammation due to the pneumococcus. As a consequence this work must be looked upon as the first complete experimental demonstration of the etiologic identity of traumatic and idiopathic tetanus.

A very interesting and significant fact brought out by this research relates to the curious variation which the tetanus bacilli underwent because of their association with the pneumococcus. It is well known that the tetanus bacillus has generally been looked upon as a *strict anaërobe;* that is, as an organism which would develop only in the absence of oxygen. CARBONE and PERRERO, however, had great difficulty in obtaining typical cultures of this bacillus by anaerobic methods, and they finally found that a luxuriant and rapid growth of the bacilli could be obtained when the cultures were exposed to the atmospheric air in the usual way. It was further found that this aerobic growth of the presumably anaerobic microbes was distinctly related to their association with the pneumococci.

This reversion to the aerobic vegetation-form in the tetanus bacilli in the case reported becomes a matter of great importance, as pointed out by the authors, since it explains the apparently anomalous phenomenon presented by the tetanus bacilli selecting as the primary seat of their pathogenic activities, the well-oxygenated larger bronchial tubes. However, if the tetanus organisms could produce a luxuriant and highly virulent aerobic culture on artificial media because of the mixture with the other species of bacteria, there is no reason why this might not happen, as suggested, in the bronchial tubes of a living animal.

The discovery of the aerobic modification of *Bacillus tetani* in mixed cultures is not original with CARBONE and PERRERO, since the fact has been noted by other bacteriologists, as BELFANTI, SANCHEZ TOLEDO, and VILLON; and the same variation has been observed with the bacillus of malignant edema by PENZO. More recently still, this very interesting symbiotic relationship of the aerobic and obligate anaerobic bacteria has been experimentally studied by KEDROWSKI (*Ueber die Bedingungen, unter welchen anaërobe Bakterien auch bei Gegenwart von Sauerstoff existeren können. Zeitschrift für Hygiene*, Bd. XX, Heft. 3, 1895), who has shown that the tetanus bacillus and an anaerobic species obtained from butyric fermentations grow readily in the atmospheric air when associated with a number of species, both of strict aerobes and of facultative anaerobes.

ADENOMAS OF THE LIVER.

Among the new growths occurring in the liver, the adenomas should have a peculiar interest for the pathologist and clinician, both on account of their relative frequency in this viscus, as well as their interesting structure. This latter has given rise to considerable discussion, and at present the consensus of opinion seems to be that these tumors are so intimately allied with the carcinomas on one hand, and the cystomas on the other, that no sharp line of distinction can be drawn.

Like most questions connected with pathology and pathologic histology, it is only in the present century that adenomas have been recognized as a distinct pathologic entity. The recognition of the finer details is a question of the last few decades. First noticed in the mammary gland, they have been successively described from other glandular structures, until they are known to occur in the breast, kidneys, liver, salivary, sweat and lacrymal glands, the glands of the stomach and intestine, etc.

In 1829 the famous surgeon SIR ASTLEY COOPER, described a "chronic mammary tumor" occurring principally in females from 17 to 30 years of age, and differentiated it from regular hypertrophy of the breast. Ten years later VELPEAU mentioned the occurrence of "fibrinous tumors" which he thought were caused "by the organization of a greater or less quantity of blood or other matter extravasated into the breast, following a blow, contusion, etc." In 1850 LEBERT[1] described four tumors of the breast markedly differing externally but agreeing in presenting glandular cavities internally, lined with epithelium. He considered them to be the same as the chronic tumor of COOPER and the fibrinous variety of VELPEAU. From this time on, our knowledge of the growths was rapidly extended by various investigators.

[1] Bulletin Soc. Anat., XXV, 11.

If we were inspecting a liver containing adenomata, we should find the organ enlarged as a rule, the surface generally nodulated, though sometimes the growths are hard to find, and the organ must be nearly "hashed," as one author expresses it, to discover them. The tumors are of various sizes, from a grain of wheat up to a small orange. They are multiple, and as a general rule the smaller they are, the more numerous. The color is sometimes grayish yellow, if infiltrated with blood reddish, but mostly of a decided golden yellow, contrasting strongly with the rest of the organ.

Microscopic examination shows the growths to be made up of little *culs-de-sac* of epithelial cells turned in various directions and bearing a more or less close resemblance to a gland, seeming as if some one had started to make a gland and then abandoned the effort, leaving the material strewn about. As a rule, two general patterns may be noticed—the tubular and the alveolar. These epithelial deposits are surrounded and supported by a stroma of connective tissue which may be thick and abundant or thin and sparse.

As already stated, our adenomas are closely related to carcinoma, hence there is the usual diversity of opinion as to their true nature. MM. KELSH and KIENER[2] claim an adenoma is merely a form of special irritative hepatitis, a special epithelial cirrhosis. SABOURIN[3] sees in adenomata a true epithelioma, but of specific nature, a reaction of the liver cell from the influence of some unknown cause of irritation. QUINQUAND[4] looks upon these growths as nothing but cylindrical epitheliomas. BRISSAUD[5] claims an adenoma is an epithelial tumor which may be transformed into a cancer at any moment. Finally, MM. HANOT and GILBERT[6] in their classic treatise look upon adenoma as only a name given by the earlier writers to a variety of primitive cancer of the liver.

This diversity of opinion is found also when the origin of the connective tissue stroma is explained. SABOURIN remarks: "While the walls of the capillaries are not modified by cirrhosis, the adenomatous cylinders are destitute of proper walls like the hepatic trabeculæ which they replace." Thus adenoma seems to be only a complication or an accident in the cirrhosis. According to LANCEREAUX[7] the cirrhosis is secondary and is a result of the neoplasms developing in the liver. KELSH and KIENER as well as HANOT and GILBERT think the cirrhosis and the adenomas develop simultaneously under the influence of the same irritating agent.

The pathogeny is still obscure. As regards age they are an appanage of early life, those of the rectum are especially frequent in children. BROCA[8]

[2] Arch. de Physiologie, 1876.
[3] These de Paris, 1881.
[4] Tribune Medicale, 1875.
[5] Arch. Gen. de Med., 1885.
[6] Traité des Mal. du Foie, 1886.
[7] Union Med, 1886. [8] Traité des Tumeurs I, p. 446.

gives a table of ninety cases in various glands; in forty-two, the ages were less than 30, in twenty-eight, from 31 to 40, and in only twenty was the age over 40. As LANCEREAUX remarks:[9] "This shows the genesis of these tumors to be related to the period of formation or development of glands."

The symptomatology recalls both that of cirrhosis and that of cancer. The onset is often made and ushered in by divers digestive troubles, disgust for food and especially meat. Dull pains occupying all the abdomen, especially the right hypochondrium and increased by profuse meteorism, ascites and wasting follows rapidly. The volume of the liver varies; if cirrhosis predominates it is small and retracted behind the ribs; most often it is increased in size, the surface hard and nodular; the subcutaneous veins of the abdomen are dilated.[10]

The spleen is of but little importance from a diagnostic standpoint, for according to HANOT and GILBERT, it is as often small as hypertrophied. Icterus is present nearly constantly; while vomiting, intense from the onset as a general thing begins slowly and progresses steadily until the end. Contrary to what we see in other forms of cirrhosis, hematemesis, melena and albuminuria are exceptional. LANCEREAUX has observed an anemic cardiac murmur in some cases.

As regards duration of the disease, after it has existed a few weeks or months the phenomena are aggravated, vomiting is frequent, dyspnea is continuous and the patient dies comatose or after syncopic attacks. In most cases this fatal termination occurs in two to four months, and the extreme limits assigned by HANOT and GILBERT are five weeks and sixteen months.

Unhappily, as THÉRESE[11] remarks, "when the diagnosis is established there is but one prognosis, and treatment so far has been palliative only."

CORRESPONDENCE.

Medical Examiners' Fees.

CHICAGO, ILL., Nov. 12, 1895.

To the Editor:—I perused with much gratification the instructive paper entitled, "Practical Life Insurance Examinations," by Dr. John L. Davis (JOURNAL, September 28), and more recently enjoyed the discussion upon this topic by Dr. W. W. Vinnedge, of Lafayette, Ind., (JOURNAL October 12 and 26) and, lastly, the views set forth in your editorial on this subject.

One of the most important questions perhaps that arises, in my mind is this, What are Dr. Vinnedge, and all his confrères throughout the country going to do about it? Suppose the life insurance companies named (and others are likely to adopt the same course) have reduced the fee for medical examinations, shall they—these companies who have accumulated and own millions of dollars worth of assets, and in hundreds and thousands of instances have relieved the distressed and unfortunate, be boycotted? Shall abler and more experienced physicians stand aside to make room for the younger members of our profession, that they may receive appointments as local medical examiners, medical directors, *et al?* Or shall we accept what is offered us by these wealthy life insurance companies—the reduced fee of $3, and be content?

The editorial in the JOURNAL of October 26 certainly has voiced the sentiment of the great majority of the profession, especially the members of the AMERICAN MEDICAL ASSOCIATION, on this important subject, and, so far as it goes, without having entered into minute details is sound. But there is something else to be considered beside money making, in a careful physical examination of an applicant for life insurance, which I shall refer to before closing this letter.

Regarding the reduced fee, as I understand it, this reduction was substantially agreed upon, at the meeting of medical directors of various life insurance companies held last May in New York after adjournment of the Baltimore meeting. It was decided then to reduce the fees of the local medical examiners of some of the oldest and best known companies in the United States. At the aforesaid meeting, however, nothing was said as to these rich and powerful corporations reducing the amount of premiums for the policies they sell; nothing was said about pruning salaries or devising ways and means to reduce salaries of higher-priced officers; neither was there anything stated or done as to the said companies reducing their rate of interest when they loan money upon desirable "gilt-edged" security. Nor was there any discussion upon the matter of lessening rents to tenants of buildings owned by these magnificent corporations, for it was not the business of these gentlemen to discuss any of those material topics; nor is it known that retrenchment and economy in other departments were considered or advocated. Solely the reduction of fees of their medical examiners was decided upon, etc.

Apropos to this question, perhaps your correspondent, Dr. Vinnedge, and a few thousand other able practitioners have felt this indignity. Physicians who for years perhaps, or during their time of appointment as medical examiners have extolled the advantages of "their" life insurance company over *all* competitors, for which they received no emolument, are now obliged to accept reduced pay or resign. In all sincerity, may I ask, is this fair treatment on the part of these immensely rich corporations?

But suppose the reduction does not stop at $3? I understand from the most reliable source that a certain life insurance company which is rated to be one of the largest and strongest companies financially, doing business in our country, has gone farther and proposes hereafter to pay something like 83⅓ cents to their medical examiners for each examination made. In Chicago the company mentioned has agreed to pay each of its medical examiners a salary of $1,000 per annum—and the company guarantees to give to each of its examiners 1,200 examinations during the year. Or, rather, the examiner is obligated by contract to do this amount of work if needs be for his company. If the foregoing statement can be disproved, I should like to have some one knowing it to be otherwise, prove the contrary.

Several life insurance companies doing business in Chicago have appointed as their medical director or chief medical referee, a specialist. Again I may be pardoned for venturing to inquire, Is this fair and honest to the men who do general practice, particularly when our "specialist" friends—most of them, at least, announce and invite our attention to the fact that their practice is limited to the treatment of a special line of disease? Therefore to my mind, it does not seem quite consistent for an oculist, aurist, gynecologist, dermatologist, alienist, neurologist or an expert in mental or nervous diseases, or one whose practice is limited to diseases of the nose and throat or other special branches in medicine, to accept a position as medical director, medical referee or medical examiner of a life insurance company. On the other hand, it might appear also that the sagacity of a company would induce it to select some other than a specialist for its chief medical adviser.

[9] Traité d'Anat. Path. I, p. 410.
[10] Thérèse Union Med. 1895 No. 34.
[11] Loc cit.

As to agents for life insurance companies, to whom reference has been made, these are varied in quality and kind. My experience and acquaintance with them, is that as a rule, they are a pleasant, agreeable and courteous class of gentlemen, and sociable to the highest degree—gentlemen who command the respect of the community in which they reside.

I take it for granted that all companies, as a rule, try to secure medical gentlemen of professional skill and ability, men of sound judgment, and who are thoroughly versed in technique, and are "broad gauge" in the theory and general practice of medicine.

I would say in conclusion, in replying to the first proposition of Dr. Davis, "that physicians do not give '*quid pro quo*' for the professional service they render life insurance companies," in my opinion, a conscientious physician always endeavors to give "value received" for his services, as he certainly should be a careful and skilled diagnostician. It is probable, too, in numerous instances that the examiner may have to call twice or even thrice upon the applicant at his residence or place of business, only to find him absent or otherwise engaged. Then he has to return to his office to complete the report of his examination, all of which requires valuable time and patience. In such instances the examiner has well earned a $3 fee, and frequently the general average of cases are not unlike the above hypothetical one. Very respectfully yours,

LISTON H. MONTGOMERY, M.D.

70 State Street.

The Protonucleins.

GOSHEN, IND., Nov. 8, 1895.

To the Editor:—I saw Dr. Summer's able and interesting paper, printed in the JOURNAL last June, on the subject of the nucleins. And being interested in the study, I concluded to make the inclosed imperfect notes of a case treated with the protonuclein:

Oct. 1, 1895, I was called to see a child aged 2 years, son of Mr. W. living in the country. The child had been sick one week under the care of other physicians. On examination, I found the following symptoms of cerebro-spinal meningitis, viz., high fever, irregular pulse, uneasy, with apparent pain, muscles of neck rigid, head drawn back, could not be raised without lifting the body, eyes staring, complete paralysis of both legs. Knowing full well the failures of all the old-time treatments in so grave a case, I determined on a new departure. I ordered 2 grains of the powdered protonuclein to be given every three hours. This course was continued for one week, night and day. The medicine was given at longer intervals for two weeks longer. No other medicine was given during this time, except a small dose of calomel on the second day.

The protonuclein had not been taken one day before the child began to show marked improvement in every bad symptom—except the paralysis. It began to move the right leg five days after the beginning of treatment—the left leg a few days later. It was brought to my office ten days ago, apparently in perfect health. I consider this case and recovery more noteworthy, from the fact there were other cases of cerebro-spinal meningitis in various parts of the county about the same time—all fatal so far as I have learned. Not far distant, there were two or three fatal cases in one family.

About six months ago, I was fortunate in getting a supply of protonuclein. At first I was slow to rely upon it alone, to the exclusion of other medicines, but my confidence has increased with my experience, and I now prescribe it in all proper cases, with the full assurance that I lose no valuable time in doing so. I could report many cases of tonsillitis, diphtheria and la grippe in which the protonuclein treatment, both as curative and prophylactic, has acted like a charm. Respectfully, A. C. JACKSON, M.D.

The Ohio Cases not Leprosy.

NEW YORK, Nov. 7, 1895.

To the Editor:—You published in the JOURNAL, November 2, an article in which Dr. McDougal asks, after describing two cases, "is this leprosy?" In my opinion they are not lepers. I inclose you a letter I wrote to Dr. McDougal.

Dear Dr. McDougal:—Thanks for your information about the supposed leper cases, and for your article which you were kind enough to send me. I have written my opinion to Dr. Morrow, who had sent me the photograph of the cases. I do not consider them lepers. Colles law, I think, proves them to be syphilitic. Certainly if they were lepers, the mother would have been infected too. Yours truly,

ALBERT S. ASHMEAD, M.D.

Cases of Optic Nerve Atrophy of Obscure Origin.

ATLANTA, GA., Nov. 2, 1895.

To the Editor:—In two issues of the JOURNAL, Dr. Würdeman gave an account of the Ophthalmic Section at the last meeting of the AMERICAN MEDICAL ASSOCIATION. In that account in giving the (above) committees as appointed, he gave my address as 56½ Whitehall Street. The mistake has caused several of my letters to be missent. Please make the correction and put my name,

C. DUNBAR ROY,
Grand Opera House, Atlanta.

Department of Public Health.

EAST LAS VEGAS, N. M., Nov. 5, 1895.

To the Editor:—Will you please inform me where I can get a copy of the bill drawn up by a committee of the AMERICAN MEDICAL ASSOCIATION for the establishment of a department of public health? Yours very truly,

W. M. SMITH, Sec'y N. M. Med. Soc.

ANSWER:—Write the Chairman of the Committee, Dr. Jerome Cochran, State Health Officer, Montgomery, Ala.

BOOK NOTICES.

Twentieth Century Practice. AN INTERNATIONAL ENCYCLOPEDIA OF MODERN MEDICAL SCIENCE. By Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York city. In Twenty Volumes. Volume IV. Diseases of the Vascular System and Thyroid Gland. New York: William Wood & Company. 1895.

The contributors to this volume are Drs. Bertrand Dawson, of London; Murray, of Newcastle-on-Tyne; Sansom, of London, and Whittaker, of Cincinnati.

The volume opens with a scholarly article by Dr. Whittaker, on Diseases of the Heart and Pericardium, which occupies half of the book. It is a complete work on the subject. Diseases of the Blood Vessels, by Arthur Ernest Sansom, of London, is next taken up and occupies eighty-three pages; Dr. Bertrand Dawson contributes an instructive article on Diseases of the Lymphatic Vessels, and the book is concluded by Dr. George R. Murray, with an exhaustive article on Diseases of the Thyroid Gland, including myxedema, cretinism, exophthalmic goitre, and goitre. On these subjects no authority stands higher than Murray.

The book is fully up to the high standard of its predecessors, and with one-fifth of the work already accomplished, it is entirely safe to say that the "Twentieth Century Practice" will be a faithful exponent of the existing state of the practice of medicine at the beginning of the new century.

Manual of Gynecology. By HENRY T. BYFORD, M.D. Containing 234 illustrations, many of which are original. 8vo, cl. pp. 488, price $2.50. Philadelphia: P. Blakiston, Son & Co. Chicago: The W. T. Keener Co. 1895.

This book is intended as a reference book for students at college, and as well for the general practitioner.

Not quite thirty years have elapsed since the "Clinical Notes on Uterine Surgery" by Marion Sims ushered into the world a distinct surgical specialty, and what a flood of gynecologic literature has since been produced! The mere enumeration of authors' names would unduly crowd this page.

Trained by his father, the late Prof. Wm. H. Byford, one of the pioneers in gynecologic surgery, and with educational advantages the elder Byford did not possess, we might reasonably expect a carefully prepared manual, giving clearly and definitely the present tenets and practice. In this we are not disappointed, and we can cheerfully commend the book.

A Practical Treatise on Materia Medica and Therapeutics; with Especial Reference to the Clinical Application of Drugs. By JOHN V. SHOEMAKER, M.D., LL.D. Third Edition, thoroughly revised. Shp. 8vo., pp. 1108. Philadelphia: The F. A. Davis Company. London: The F. J. Rebman Co. 1895.

In this edition, the author has revised the text to conform to the nomenclature of the U. S. Pharmacopœia of 1890 and has added much new material. Among the newer articles we notice mention of tolysal, tolpyrin, salocoll, salacetol, chlorphenol, bromphenol, ethylenediamine silver phosphate, tropacocaine, formaldehyde and formalin, dulcin and tannigen. The antitoxins and serumtherapy, and the use of animal extracts have received appropriate mention.

The author has made a careful revision, and has compressed a vast amount of information in the book, but he seems rather frequently to have kept his own opinion in the background, when giving at length the opinions of the multitudinous authorities cited. We regret extremely that the revision has not extended to the dosage. The obsolete British system, which has not only disappeared from the U. S. Pharmacopœia, but which will not again appear in the British Pharmacopœia itself, still disfigures the pages of this otherwise excellent work on materia medica. Notwithstanding this serious defect, the work will be found one of the most useful for reference, and altogether creditable to the author. The observations on the more recent additions to the materia medica are conservative and judicious,

As regards pharmacologic remedies the author by no means restricts himself to those which are official. Numerous substances, both of vegetable and mineral origin, not yet recognized by the pharmacopœia are discussed. Some of these will no doubt be made official hereafter, and it must be a pleasant reflection to the author that so many drugs, of which he was the first to recognize the value have already become official after demonstration of their usefulness.

NECROLOGY.

ROBERT BATTEY, M.D., of Rome, Ga., November 8. He was born Nov. 26, 1828, in Richmond Co., Ga., and was a son of Cephas Battey, a native of Peru, N. Y. His ancestors who were English, settled at Providence, R. I. He was educated at Augusta, Ga., and at Phillips' Academy, Andover, Mass., and studied medicine at Booth's laboratory, Philadelphia, the Philadelphia College of Pharmacy, the University of Pennsylvania and Jefferson Medical College, graduating from the Philadelphia College of Pharmacy, March 17, 1856, and from Jefferson Medical College, March 7, 1857. He resided in Rome from December, 1847, to the present time, excepting the interval from November, 1872, to October, 1875, during which he was temporarily at Atlanta, Ga., as professor of obstetrics in the Atlanta Medical College, and editor of the *Atlanta Medical and Surgical Journal*. He originated and successfully performed, in August, 1872, an operation for the removal of the ovaries, with a view to effect the change of life in women, and thereby effectually remedy certain otherwise incurable maladies, an operation which has been many times repeated by himself and others. He devised, and used successfully in 1859, an improved apparatus for vesico-vaginal fistula; and in 1872 he discovered that water introduced by the rectum, may be readily passed in the living body, the patient being etherized, throughout the colon, the small intestines and stomach, coming out at the mouth, and he has repeatedly so passed it, as others after him have done, the entire practicability of doing it having been demonstrated upon the cadaver, at the Atlanta Medical College in December, 1873, in the presence of the professor of anatomy and his class. On June 3, 1869, he performed successfully the operation of perineal section (suggested by Prof. Willard Parker, of New York), for chronic cystitis in a man of 62. In April, 1874, he successfully performed the new operation of vaginal ovariotomy, being the third instance of the operation. In November, 1876, he removed from a man of 43 a fibro-cystic tumor of the carotid region, weighing four and a half pounds, the patient making a good recovery in fourteen days. He devised, in 1858, and has often practiced a new method of treating club-foot, by the use of carved wooden splints and roller bandage. He was a member of the Georgia Medical Association, of which he was elected president in April, 1876, and of whose board of censors he had been chairman since April, 1873; the Atlanta Academy of Medicine; the American Gynecological Society; and AMERICAN MEDICAL ASSOCIATION, in which he was chosen a member of the Judicial Council in May, 1875, and secretary of the Obstetric Section at the same time, as also in June, 1876. He contributed numerous essays and reports of cases to the various medical journals of the country. In July, 1861, he was commissioned surgeon in the Confederate Army, serving as surgeon of the 19th Georgia Volunteers; as senior surgeon of Hampton's Brigade; as senior surgeon of Archer's Brigade; as surgeon-in-charge of the Fair Grounds Hospital, number 2 at Atlanta, Ga.; as surgeon-in-charge of Polk Hospital at Rome, Atlanta, and Vineville, Ga., and at Lauderdale, Miss., and subsequently at Macon, Ga., until the close of the war.

JOSEPH C. GILBERT, M.D., a prominent physician of large practice in Philadelphia, died October 26, of apoplexy. He was a native of this city and was born in 1832. He graduated from the old Pennsylvania Medical College in 1853. He served for three months as assistant surgeon in the 24th Regiment Pennsylvania Volunteers, and at his death was a member of Ellis Post No. 6, G. A. R. He was greatly interested in the development of his portion of the city and for six years represented the Twenty-second ward in Councils.

JOSEPH DAFFRON SCHOALES, M.D., died in Philadelphia, October 24, of uremia. He was born in Ireland Nov. 27, 1837, and when 5 years of age the family immigrated to this country and settled in this city. His father was the late Dr. Marcus A. Schoales. Dr. Joseph D. Schoales was graduated by the Medical Department of the University of Pennsylvania in 1857. He served as surgeon to the Twelfth Pennsylvania Cavalry, until it was mustered out in 1865, except for a short period when he was detached for special service. He was surgeon-in-chief at Harper's Ferry, under Colonel McReynolds and also under General Sigel when the latter made his raid through the Valley of the Shenandoah. He was captured at Winchester, but after being prisoner of war for a month, made his escape and returned to his regiment. He was mustered out with the rank of Major and at once resumed practice in Philadelphia. About thirteen years ago he was accidentally infected and afterward suffered with paralysis but continued in practice in spite of failing health until three years ago. He was a member of the Philadelphia County Medical Society.

BASIL NORRIS, M.D., U. S. Army, retired, at San Francisco, Cal., November 11, aged 67. Dr. Norris who was retired with the rank of Colonel, was born in Montgomery Co., Maryland, March 9, 1828. He was graduated at the University of Maryland with the class of 1849 and entered the army as assistant surgeon in 1852. He served with the troops in Texas until 1857, in Utah until 1860 and in New Mexico until 1862. He was promoted surgeon in April, 1862, was appointed inspector of hospitals in October, 1862, and Medical Director of the left grand division of the Army of the Potomac in February, 1863, and, subsequently, attending surgeon at Washington. He was brevetted Lieutenant-Colonel for faithful and meritorious service during the war and subsequently promoted to the rank of Lieutenant-Colonel and Colonel. When retired he was Medical Director of the Military Division of the Pacific. His writings were numerous and scholarly. He was a genial companion, an accomplished officer and a faithful friend. Few men connected with the public service had a wider circle of friends and acquaintances.

PUBLIC HEALTH.

The State Board of Health of Michigan has published an abstract of a commendatory notice of their course in regard to popularizing hygienic knowledge, and inculcating sanitary precepts with a view to the extinction of zymotic diseases, by means of pamphlets, etc., which appeared in the *Journal d'Hygiene*, Paris, France, October 10.

Michigan State Board of Health.—The circular of the Michigan State Board of Health on the prevention of typhoid fever has been issued. The pamphlet contains the following: mortality, source of infection, mode of communication, the protection of the water supply, period of incubation, the duties of householders and physicians, duties of local board of health and health officer, precautions, disinfection of the bowel discharges of the sick, disinfection of urine, clothing, towels, etc., bodies of the dead, disinfection of rooms, privies, etc.

Diphtheria at Newark, N. J.—By reason of the great prevalence of this disease at Newark, the common council has, after much contention granted to the Board of Health the sum of $2,500. The City Hospital also receives an additional grant of $4,000, to tide that institution over the present crisis. A protracted and bitter dispute has taken place between the mayor of the city and the health authorities over the expenditures of the latter. Some physicians assert that the disease can be traced to the promiscuous use of drinking cups in public schools, and contend that the school board should coöperate with the health board to abolish this practice. There were reported in Newark in October 183 cases of diphtheria, 84 more than in September.

Contagious Disease Hospitals Compared to the Fire Departments of Cities.—Dr. William Smith, President of the recent Sanitary Congress at Hull, England, in his address took occasion to congratulate that city upon the establishment there of an admirable infectious disease hospital, the provision for smallpox patients, and the ship for the isolation of cases of cholera. It might occur to some of the ratepayers of Hull that if these hospitals were not used, there was something of a reason for abolishing the cholera and smallpox hospitals, or at least making some other arrangement by which the expenses attendant on their maintenance were to be somewhat abated. He hoped that if any such idea existed in the minds of any, that they would once for all get rid of it. They really must look upon them as a provision made, as it were, in times of peace for war and for the trouble which might come upon them at any moment. The provision of those hospitals was as necessary as fire stations. It would be almost as reasonable to expect to organize a fire department anew, in the face of each new conflagration in our cities, as to be in the attitude of some communities that put off the organization of their hospital for infectious diseases "until the actual demand" for them.

Etiology of Epidemic Cerebro-Spinal Meningitis.—In 1887 Weichselbaum described a parasitic microörganism which he claimed was pathogenic for cerebro-spinal meningitis and which from its habitat he called *diplococcus meningitidis intra-cellularis*. His observations which were confirmed by Goldschmidt, Marchiafava, Celli and other bacteriologists, have been energetically discussed since, both in France and Italy. A number of authors, and among them Bordoni-Uffreduzzi, claim the microörganism described by Weichselbaum is nothing but a variety of the pneumococcus. In order to settle this question Jaeger,[1] during a small epidemic of this disease in Stuttgart, made some anatomic and bacteriologic researches. He separates the Weichselbaum diplococcus from the Fränkel coccus, through morphologic characters. The former does not have the elongated lanceolate form of the pneumococcus; it is more rounded, and when joined to another, looks something like the sole of a shoe. The capsule surrounding it is much less developed, and very often is difficult to recognize. In pure cultures the diplococcus of Weichselbaum, like the pneumococcus, often takes the form of small chains, but very often also it is grouped in tetrads which are never seen in Fränkel's coccus; it is more of a tetracoccus than a diplococcus. These differences extend to their biologic characteristics also; the intracellular coccus is much more resistant. It is never pathogenic in subcutaneous injections; it must be introduced into the serous cavities as the pleura or peritoneum in order to cause morbid phenomena. Jaeger looks upon the intracellular coccus as the true pathogenic agent of epidemic cerebro-spinal meningitis. The pneumococcus plays a much less marked rôle; to be sure it is found in some cases but we find streptococci and other microbic agents in them also. These cases are nearly always isolated sporadic ones. It is fair to suppose that in the cases of epidemic meningitis where the pneumococcus is found, we have to do with examples of mixed infection. The mode of transmission of this epidemic form of meningitis is still but little known.[2] However, the presence of the intracellular coccus in the nasal secretions, and its persistent virulence in the dried mucus throw some light on the propagation of the disease. The pathogenic microbe is disseminated by the nasal secretions soiling the linen and clothes of the patient, or by the sputum, and thus produces the almost murderous epidemics.

A Berlin Oekonomierath's Dairy.—The *Public Health* (London) reports the persistent agitation of the pure milk question that is going on in official and private circles in London. From a recent report of the Royal Commission appointed to inquire into the effect of food derived from tuberculous animals on the health of human beings, many lessons are to be learned regarding the nicety and scientific precautions that obtain in some of the German and Danish dairies. In one or more of the German dairies the milk is filtered through three layers of fine gravel, and it is impossible for the inexperienced person to realize how much dirt is collected by this process. A condensed statement taken from the Report of the Royal Commission, concerning one of the leading Berlin establishments is as follows:

The *Milch Kur-anstalt* of Herr Oekonomierath Grub, situated at the Victoria Park, in the southwest of Berlin, is designed solely to provide milk of the first quality for children and invalids. No cream, butter, or cheese is made. Stalls for 250 cows are provided; they are lofty and well-ventilated; the floor is made of cement, and the walls, to a height of eight feet, are covered with white glazed porcelain tiles. Dried peat serves to absorb the excreta, and prevents any unpleasant smell. Only such animals as come from the healthiest breeds (chiefly the Swiss) are bought, and, as a rule, they are not kept for more than one year. No animal is accepted without the district veterinary surgeon's certificate as to its healthy condition; and before its milk is utilized, it is placed in an observation stall for some days, under the control of the company's own veterinary surgeon, who regularly examines all animals in the institution. As food stuffs, only hay from the Jura Alps and wheat meal are allowed. Brewers' grain, various oil-cakes, and even grass are excluded. Before milking, the udder is carefully washed, and the milk is received into pails made out of one piece of metal with no sharp angles. Great stress is laid on the importance of removing as quickly as possible from the cow-shed the milk that is drawn, and therefore, as soon as five or six pails are full they are removed, and the milk is cooled down by a Laurence cooler. The liter bottles, previously having been cleaned by washing in a soda solution and brushing (the latter operation being materially assisted by introducing a little sand), are then filled, stoppered by a patent porcelain cap, stamped with a leaden stamp, and dispatched to the city twice daily. A large business is also done in the preparation of sterilized milk, for which the arrangements are exceedingly good. The sterilizer is capable of holding 600 bottles at a time, and these, when filled, are placed with the porcelain cap, with its india-rubber col-

[1] Zeits. f. Hyg. u. Infect., XIX, 2.

[2] La Sem. Medicale, 1895. No. 48.

lar loosely fixed, in the apparatus. The temperature in the interior is maintained for an hour to an hour and a half at between 90 and 100 degrees Cent. This *Milch Kur-anstalt* no doubt owes much of the success it has attained to the way in which it is supported by the medical profession, some of the best known members of which have allowed their names to appear as references."

Sanitation in India.—The following rules for combating epidemics of cholera in municipalities of the Madras Presidency were recently framed by a committee consisting of the Honorable C. S. Crole, Surgeon Major-General C. Sibthorpe and Surgeon Lieutenant-Colonel W. G. King, appointed by the Government of Madras. These rules are not intended for introduction into Madras city, and will for the present apply only to the twenty-four mufassal municipal towns. It is the object of these rules to insure: 1, that the earliest possible information of every attack of cholera should be conveyed to the authorities, so that the cholera microbes may be at once prevented from being conveyed into situations in which they might spread the infection; 2, that the microbes should be at once completely destroyed; and 3, that medical assistance may be provided for those who, in spite of precautions, are attacked by the disease. They accordingly follow these three divisions. Municipal councils shall be responsible for the general carrying out of this scheme and district medical and sanitary officers for the detailed working of the rules. The latter shall make their own arrangements both in their headquarters and elsewhere in the district, except in municipalities where there are civil surgeons. In these, civil surgeons shall be responsible. For the purpose of these rules, every municipality to which they apply shall be divided into "circles" comprising from 2,000 to 3,000 houses containing from 7,500 to 10,000 inhabitants. These circles should, as far as possible, follow ward divisions or other local limits so that they may be readily comprehended. Three circles shall form a "division." Chairmen will at once map out their towns into "circles" and "divisions," and after approval by the collector, record the maps in their offices, and send a copy to the senior medical officer of the municipality. For each division of 22,500 to 30,000 inhabitants, the chairman shall at once procure and retain in the municipal stores the following apparatus and disinfectants:

	Rs.	a.	p.
12 portable tin canisters for disinfectants at Rs. 1–8	18	0	0
9 lb. perchlorid of mercury at 3 annas an oz.	27	0	0
9 lb. commercial hydrochloric acid at 2 annas per oz.	18	0	0
60 lb. carbolic acid at 4 annas per lb.	15	0	0
600 lb. of sawdust and 600 lb. of unslaked lime at $1\frac{3}{4}$ pies per lb.	8	5	4
Total	86	5	4

He will be responsible that these stores are always maintained and in good condition. Should it appear to the collector of the district that cholera imminently threatens to attack any municipality to which these rules apply, he shall warn the chairman of the council and the district medical and sanitary officer and the senior medical officer of the town accordingly. Upon receipt of such warning the chairman shall immediately appoint in each circle of the town an observation staff consisting of:

	Rs.	
One inspector on	15	}
One peon on	8	} per mensem.
One toty on a maximum of	7	}

and in each division a divisional inspector on Rs. 35+15 jutka or horse allowance with an orderly on Rs. 8. The orderly should be allowed a jutka or pony to enable him to carry without delay such orders to circle inspectors as may be given. The chairman shall without delay report to the collector the date on which these appointments were made. This staff should be drawn from the existing sanitary establishment of the municipality, as their local knowledge will be valuable, and the vacancies so caused should be filled by temporary hands who should be paid at the rates sanctioned for that establishment. It will be the duty of the members of the observation staff to constantly and systematically patrol the whole of their circle in order to gain intelligence of the first case of cholera or severe diarrhea in it, so that immediate action may be taken. At such times cases of severe diarrhea should be regarded as equally dangerous with cholera. The members of the observation staff should also be employed in removing with the aid of the ordinary conservancy establishment, all defects in sanitation which would favor the multiplication of the cholera microbe, such as decaying rubbish or stagnant sewage, and should report their action to the chairman. They should further warn the inhabitants of the circle to adopt the precautions against cholera prescribed in the extract from Surgeon Lieutenant-Colonel King's "Simple Sanitary Rules" which is printed as an appendix to these rules, and should distribute copies of this, which the chairman will keep ready printed in the vernacular, gratis, and as widely as possible. The chairman and councilors and municipal servants of all ranks should assist the observation staff in every way possible, and the police in every way compatible with their other duties, both in getting information of the first attack and in removing sanitary defects in the circle.

On receipt of information under the above system of the first attack of cholera, the chairman shall at once employ in the circle in which it has occurred (but not in other circles) the following additional staff: three peons on Rs. 8 each; three toties on a maximum of Rs. 7 each, and shall report to the collector and the district medical and sanitary officer the date on which he did so. This staff, like the observation staff, shall be selected from the ordinary existing municipal establishment, the vacancies so caused being filled by temporary men on the sanctioned rates, and it shall be combined with the observation staff of the circle so that the whole may thenceforth form "a preventive staff" to carry out the duties set forth below. The preventive staff shall visit every house in which cholera has occurred and shall use the greatest care in seeing that all choleraic vomit and excreta are at once collected in separate vessels, mixed with carbolic sawdust,[1] paddy husk or other combustible matter, and where necessary with kerosene oil, and thoroughly, completely and immediately burnt on or near the premises. The burning shall invariably be carried out in the sanitary inspector's presence, and he shall be responsible that it is thoroughly done. The chairman shall delegate to the senior medical officer of the town his powers under section 231 (i) of Act IV of 1884 of entering and inspecting houses. Rags, clothes and bedding stained with vomit or excreta should similarly be burnt upon the spot under the same precautions, the danger of keeping such articles being fully explained to the owners and full compensation in money or kind being offered in the case of the very poor. Floors and furniture stained with the vomit or excreta should be disinfected by being thoroughly sprinkled with a solution of perchlorid of mercury made up as shown in the note.[2] The burning of tar and sulphur in houses and streets should be discontinued as it is inefficient as a disinfectant, but street drains outside the houses attacked should be flushed with the given solution.[3] The greatest courtesy and consideration should be used by the preventive staff to all classes in carrying out these instructions, as the exercise of extreme tact is essential to the success of the scheme. After a patient has recovered, the house, and especially the room which he occupied during the attack, should be thoroughly disinfected. The floors should be dug up wherever stained with choleraic matter and the earth burnt. The floor and the house drains and the furniture should also be liberally sprinkled with the solution above described.[4] The chairman shall provide the medical officers responsible for working the rules with a permanent advance of Rs. 50 per division, which shall be recouped from time to time by bills supported by vouchers where possible. The preventive staff shall continue to be maintained in an affected circle for ten days after the last attack of cholera in it, and the observation staff in all circles for twenty-one days after the last attack in the town. During this time they should be employed in remedying sanitary defects. There shall be a headquarters in each division at which a medical subordinate shall reside who shall be supplied with medicines, and medical comforts from the municipal hospital for the treatment of those attacked and who shall be available for attendance gratis on the sick in their own houses. This

[1] One part of carbolic acid to ten parts of sawdust.

[2] ½ oz. perchlorid of mercury.
1 oz. hydrochloric acid.
Three gallons (one small chatty full) of water with a pinch of red ink powder to color it to prevent accidents.

[3] Wooden buckets or earthen pots should alone be used for carrying about this solution, as it destroys metal vessels, and the packets of the solid perchlorid should be labeled "Poison" in English and the vernacular and only intrusted to the inspectors themselves.

[4] It is most desirable that the excreta of a patient for at least ten days after he has recovered from an attack should be carefully collected and carried away. These still contain cholera microbes. For this purpose a Dindigul bullock lorrie costing Rs. 30, and air-tight iron excreta drums costing Rs. 2-8-0 each, may be provided. The purchase of these will, however, be left to the option of councils.

shall also be the headquarters of the division inspector and of the preventive staff on night duty. In one place at least in each town there shall be isolation huts with separate accommodation for males and females for the treatment of those who desire it or who are brought there. These shall be in charge of a medical subordinate with the necessary staff and supplied with equipment, medicines and medical comforts. This subordinate shall be deputed to no other duty. He shall reside with his staff on the spot and shall be adequately housed. Charges for medical treatment under these rules shall be met from the allotment in the budget under Grant III, Hospitals and Dispensaries. The headquarters of the divisions and the sites for the isolation hospitals shall be at once selected and shall be marked on the maps referred to above. In order to make provision for meeting the charges under the portions of this scheme relating to observation and prevention, the council of every municipality to which the scheme applies shall be required to allot in every budget under "cholera charges" a sum which shall be in the proportion of Rs. 1,000 to every 25,000 inhabitants in the municipality. This shall be called the "cholera reserve" and shall not be spent upon any object but the carrying of this scheme into execution. The provision of this reserve should not be allowed to disturb the existing percentages to the total municipal income of the expenditure upon communications, education, sanitation, etc., or to swell the total of the allotment made for sanitary purposes under Grants I, III and IV taken together, but should be set aside from funds which are at present annually expended upon permanent (as distinguished from recurring) sanitary needs. Municipal councils are hereby authorized to employ establishments on the scales above laid down as the necessity for them arises, and to defray the charges from the cholera reserve in anticipation of the sanction of Government, but this sanction should be obtained without delay. On the final withdrawal of the special staff, the medical officer responsible for working these rules shall within seven days forward a report on the epidemic and the operation of the rules through the chairman of the municipality to the collector for the orders of Government. In cases where the medical officer in question is subordinate to the district medical and sanitary officer or the civil surgeon, such report shall be forwarded through those officers. In every case such communications shall be submitted to Government through the sanitary commissioner.—*The Indian Medico-Chirurgical Review*, September, 1895.

The Chicago Drainage Canal.—Final Report of Sanitary Inspector.—At the meeting of the Board of Trustees of the Sanitary District of Chicago, the clerk presented a report from Dr. William Martin, Sanitary Inspector, with reference to sanitary conditions along the main channel, and tendering his resignation of his office; and the report was read and referred to the Committee on Public Health and Order. The following is the communication:

CHICAGO, Oct. 29, 1895.

To the Honorable, the Board of Trustees of the Sanitary District of Chicago:

Gentlemen:—In making this, which I intend shall be my last report, I shall take occasion to review the work done in this department, and state the conditions existing at the time of assuming charge, which necessitated the appointment of a Sanitary Inspector.

Soon after the inauguration of the work in the fall and winter of 1892, it was discovered that a great deal of sickness was prevalent in the various quarters along the channel where the men were housed and fed. This arose entirely from the wretched sanitary conditions surrounding these places, and was of such a threatening character as to call for prompt action on the part of the Trustees in order to guard against epidemics which were liable to occur at any moment unless a radical improvement was secured in this respect. Numbers of these places were located in low swampy spots, abounding in malaria, with no facilities whatever for proper drainage. The bunk-houses were poorly constructed and very much overcrowded. The water was very impure and no adequate provision was made for the proper disposition of camp sewage. As a natural sequence sickness was quite prevalent, and as there was no organized system for the medical care of the laborers, they were in a most wretched condition, were they so unfortunate as to fall ill. After my first thorough inspection of the entire line and the submission of my report, the recommendations therein made were promptly acted upon and a number of sanitary regulations adopted, designed to correct the evils to which I had called attention. Cards on which these rules were printed were ordered to be posted in all of the quarters, and instructions sent to each contractor that these regulations must be rigidly enforced. Having discovered that there was no law in Illinois bearing on the subject of overcrowding in lodging houses, this Board was instrumental in having the State Board of Health pass a resolution in which was clearly defined the minimum air space that each lodger is entitled to, this being the first time in the history of the State that any such regulation was enacted. No provision having been made for the care of the sick and injured among the employes on the work, a plan had to be devised that would meet this requirement. This was done by an assessment of 2 cents a day on each man for hospital fees, for which sum a number of physicians living along the line contracted to take care of them in hospitals owned by themselves or in the hospitals of Chicago and Joliet, with the authorities of which they had arranged for such treatment. Suitable means of conveyance being employed to transport patients to these various hospitals, this plan has seemed to work well, and has secured good medical and surgical attention at a very trifling cost to the laborers. By strictly enforcing the regulations in regard to the supply of wholesome water, a proper disposition of camp sewage, overcrowding of bunk-houses, and an abundant supply of substantial, well-cooked food, we have been successful in keeping the camps free from epidemics of disease, which is always a danger to be apprehended where large bodies of men are being cared for on great works of this character. As proof of our success, I would cite the fact that during the prevalence of smallpox, which prevailed in Chicago during the year 1893 and 1894, there occurred on the drainage channel a total of sixteen cases only. This, when we consider the fact that the majority of the laborers who came from the city were accustomed to live in the cheap lodging houses, which were regular hotbeds of contagion, was a very flattering result, and was only achieved by the most thorough systematic vaccination of all the workmen on the line, compelling them to submit to it or seek employment elsewhere. Numerous analyses have been made of the drinking water furnished the men, in order to insure the purity of what is usually one of the most prolific causes of disease. Where such impurities have been detected, prompt measures have been adopted to correct such evils which have resulted in warding off danger from this source. The work of inspection has been materially aided by the police force of the Sanitary District, who are under orders to report any negligence on the part of the contractors pertaining to sanitary matters. That they do the work well is attested by numerous reports made to me, which are on file in my office. A great deal of misapprehension seems to exist in the community at large in regard to the powers of the Board of Trustees, as it relates to the control of all matters pertaining to health and public order as applied to the laborers on the canal. It is generally believed that their power is absolute, when the facts are that it is very limited. The law gives them the power of controlling the various camps in regard to keeping them in a proper sanitary condition, but they have no control whatever as regards the care of the sick and injured men, which is a matter resting entirely with the contractor who employs them. Some undeserved criticism has been made of this Board, as well as myself, in connection with this subject, probably through misapprehension on the part of the critics, and not with any design of placing this Board in a false position, for I think it can be truthfully said that in all matters pertaining to the health, physical and moral well-being of the laborers employed on the channel, the Trustees have ever been thoroughly impressed with their duties and active in the discharge of them. In a work so extensive as this, ideal conditions can not be maintained in all things, but taken collectively, there is a higher average of conditions favorable to the laborer than was ever known on any public work of corresponding magnitude. I had occasion during year of the World's Fair to meet travelers from various parts of the world who had seen the other great canals during their period of construction, and they all united in the opinion that our men were better fed, better housed, and in every respect better cared for than anything they had witnessed on the Suez, the Panama, German and Manchester Canals, or on any of our own great railroads.

(Signed) WILLIAM MARTIN, M.D.,
Sanitary Inspector.

Health Reports.—The following health reports have been received by the Supervising Surgeon-General, Marine-Hospital Service:

SMALLPOX—UNITED STATES.

Arkansas: Mississippi Co., November 6, 43 cases, 2 deaths.
Louisiana: New Orleans, October 5 to November 2, 7 deaths.
Michigan: Smallpox reported present at Detroit, Hamtramck Twp., Rochester.

SMALLPOX—FOREIGN.

Antwerp: October 15 to 22, 2 deaths.
Cairo: October 8 to 14, 1 death.
Dublin: October 19 to 26, 4 cases, 1 death.
London: October 19 to 26, 1 death.
Moscow: October 5 to 12, 1 case, 1 death.
Nogales: November 2, 1 case.
Odessa: October 12 to 19, 3 cases, 1 death.
St. Petersburg: October 1 to 19, 13 cases, 5 deaths.
Prague: October 5 to 19, 5 cases.
Rio de Janeiro: October 5 to 12, 3 deaths.
Rotterdam: October 19 to 26, 1 death.
Santos: October 5 to 12, 1 death.
Southampton: October 19 to 26, 1 case.
Teneriffe: September 21 to October 5, 2 cases, 1 death.
Trieste: October 18 to 25, 1 case.
Tuxpan: October 19 to 26, 3 cases,
Zurich: October 12 to 19, 1 case.

YELLOW FEVER.

San Juan de Puerto Rico: October 5 to 12, 10 cases, 1 death.
Rio de Janeiro: October 5 to 12, 3 deaths.
San Salvador; November 1, yellow fever reyorted.

CHOLERA.

Bombay: October 1 to 8, 2 deaths.
Osaka and Hiogo: October 5 to 12, 7 cases, 7 deaths.
Japan: total cholera statistics from date of outbreak to Oct. 10, 1895: cases 52,218; deaths, 36,075. During the week October 3 to 10, 1,279.
Cases of cholera occurred on Japanese army transports occupied in the movement of troops from and in Formosa.

MISCELLANY.

Association of Assistant Physicians of Hospitals for the Insane.—The second meeting of the Association of Assistant Physicians of Hospitals for the Insane was held at the Michigan Asylum for the Insane, Kalamazoo, Mich., Oct. 24, 1895. The membership, originally composed of medical officers of the staffs of asylums of Michigan, Illinois and Iowa, was extended to include the assistant superintendents and assistant physicians of all asylums. The next meeting will be held at the asylum at Independence, Iowa, during May, 1896.

Mr. Edison's Definition of Electricity.—A New Jersey paper quotes "the wizard" Edison as offering the following definition: "Electricity is a mysterious fluid about which nothing is known." Certainly, if any one could tell what electricity is, Mr. Edison would seem to be the man. He frankly acknowledges entire ignorance of it. He knows undoubtedly a multitude of ways in which it manifests itself, and he has been marvelously successful in utilizing those manifestations. But of the force itself he knows nothing.

Horseless Vehicles for the Country Physician.—The *Popular Science News* has the following note regarding a new form of horseless carriage:

"Self-propelling carriages are being introduced from France, where they make a speed of eight to fifteen miles an hour on the level. The motive power is a gasoline engine, which occupies little space, and carries sufficient petroleum spirit to last for a run of fifty miles; other kinds use electricity, etc. There are hundreds of these carriages in France. Country doctors find them useful, and as the engines are noiseless, horses are not frightened by them."

But France has well drained, macadamized roads. Deep mud, such as we encounter in our country roads, is too much of a hindrance to the operation of the vehicle.

Massage an Occupation for the Blind.—From *Popular Science News:* "It is stated that in Japan, massage is practiced almost exclusively by blind persons. The idea is that the sense of touch is so much more delicate and developed in those who have lost their vision, that the employment of them as masseurs and masseuses is quite in accord with the natural fitness of things. Blind persons are largely used for this purpose in St. Petersburg, and at a massage school there the professor is also blind. Doubtless, were our massage establishments officered by blind male and female persons the suspicion raised against them that they were used for improper purposes would soon be removed."

Tubercular Disease of the Portio Vaginalis.—In the *British Medical Journal*, Dr. J. D. Williams has reported two cases of the above named affection. In the first of these cases, the patient was 63 years of age and the subject of phthisis, from which she died a few weeks after being brought to the hospital. The genital organs, removed at the autopsy, showed a tuberculous affection of the cervix involving a portion of the adjacent vagina. There was no tubercular disease of the body of the uterus nor of the appendages. The second case was that of a patient 36 years of age. She showed some disease of both apices. On the cervix an irregular ulcer was to be seen, which, on microscopic examination, proved to be of a tuberculous nature. The cases are of interest from the location of the lesion. The cases bear out the observation made by others, that in cervical tuberculosis the body of the uterus and the appendages usually remain free of disease.

Practice of Veterinary Science made Amenable to Law in North Dakota.—An act has been passed in North Dakota regulating the practice of veterinary medicine, surgery or dentistry in that State. It provides for the appointment of a board of examiners, the issuance of certificates, and makes it a misdemeanor punishable by a fine of not less than fifty dollars nor more than one hundred dollars, to practice in violation of this law. But an exception is made where gratuitous services are rendered in cases of emergency, dehorning of cattle, and castration of animals. All persons beginning the practice of veterinary medicine, surgery or dentistry in the State, after the passage and approval of this act, must be graduates of a legally authorized veterinary school, college or university, and they shall subject themselves to such examination as the board may require. Any person complying with the provisions of this act shall be entitled to expert fees as a witness in all cases relating to the veterinary profession in any court of law or equity.

A Case of Umbilico-Vesical Hernia.—According to *La Semaine Medicale*, August 21, Dr. Lannelongue reported to the Congress of Gynecology, Obstetrics and Pediatrics recently held at Bordeaux, the following interesting case: some years ago a woman brought to him a male infant, aged three months, which passed water, both through an umbilical appendix resembling a penis, and by the natural organ, which was in its proper place. The jet which came from the umbilical canal described a curve more than 30 centimeters in diameter. On examination, it was found that the apparent abnormal pelvis was an umbilical hernia caused by the persistence of the urachus. A urinary fistula had been produced on the separation of the umbilical cord. The child subsequently died, and the author had an opportunity to make a necropsy. The bladder was injected, and it was then seen that the viscus was prolonged by a channel as large as the forefinger, namely the urachus, up to the umbilicus. The channel extended into the external appendix, where it opened by an oblique orifice resembling the meatus urinarius. The contractions of the bladder in micturition caused a stream in both directions, umbilical and urethral, hence the double jet of urine seen from time to time; this, however, was exceptional, as the musculo-elastic ring of the umbilicus fulfilled the function of a sphincter and prevented the escape of urine through that orifice. The author suggests that this case once more shows the necessity of tying the umbilical cord only after having satisfied one's self that there is no hernia at the proximal end.

Burns Treated by Strong Carbolic Acid.—Dr. Benjamin H Brodnax, of Broadnax, Louisiana, writes to the *Popular Science News* as to above bold line of treatment of burns and scalds: "Take pure undiluted carbolic acid; with a feather or fine brush, paint the burned or scalded surface, extending a little over the edge, where the wounded surface is not bare. Pain instantly ceases, and if care is taken no further dressing is required, but a light tissue of lint cotton and one roll of bandage will insure from contusions, etc." Dr. O. H. Allis, who read the original article, sent him by myself, before the Philadelphia County Medical Society, March 10, 1894, remarked: "To my mind it is one of the boldest ventures in all surgery. To think of applying to a raw and agonizing burn that which would scald a healthy cutaneous surface would seem to the unreflective mind a reckless and cruel act. But when we consider that a raw burned surface is painful from its exposed nerve filaments, and that the strong acid combining with the albumin of the tissues forms a coating that excludes the air, while at the same time it benumbs —paralyzes—each terminal exposed filament, the remedy seems to be the result of a happy inspiration."

Fifteen Thousand Pasteurian Treatments—The Record of Nine Years.—The last annual report of the Pasteur Institute embraces the ninth year of its operations, and shows in that time the grand total of 15,217 persons treated. The mortality, excepting those cases that were considered to be in a hopeless state at the time of reception, was eighty-one deaths, or a mortality rate of a little over one-half of 1 per cent. The lowest the rate of mortality has touched in any one year was a little more than 2 per 1000, and the rate has shown a marked decline in recent years, compared with the years immediately following the establishment of the Institute. Whatever may be our hesitancy—natural or acquired—regarding institutional statistics, the following may be taken as conclusive testimony of one of the greatest conquests over disease that has yet been made: in 1886, number of persons treated, 2,671; deaths 25; rate of mortality per cent., 0.94. In 1887, number of persons treated, 1,170; deaths, 14; rate of mortality per cent. 0.79. In 1888, number of persons treated, 1,622; deaths, 9; rate of mortality per cent., 0.55. In 1889, number of persons treated, 1,830; deaths, 7; rate of mortality per cent., 0.38. In 1890, number of persons treated, 1,540; deaths, 5; rate of mortality per cent. 0.32. In 1891, number of persons treated, 1,559; deaths, 4; rate of mortality per cent., 0.25. In 1892, number of persons treated, 1,790; deaths, 4; rate of mortality per cent., 0.22. In 1893, number of persons treated, 1,648; deaths, 6; rate of mortality per cent., 0.36. In 1894, number of persons treated, 1,387; deaths, 7; rate of mortality per cent., 0.50.

Statistical and Sanitary Notes from the Military Department of the Platte.—Colonel Dallas Bache, assistant surgeon-general U. S. Army, states in a recent circular that it is his intention, as medical director of the Department, to issue for each month a statistical and sanitary note "for the purpose of distributing a class of information which is of equal interest to himself and the medical officers of posts. It is not intended to institute close comparisons between local statistics, into which different factors must enter, but to associate all the medical officers in the Department in matters of general concern, and to supply them at short intervals with intelligence which is now a subject of annual report." The form used by Colonel Bache gives the name of each post, its mean strength, the admissions for disease and for injury, the number inefficient daily, the deaths and discharges, and the admissions and constant sickness as percentages of the strength. Under date Oct. 30, 1895, Nos. 1, 2 and 3 of these "Notes," for July, August and September respectively, have been published. Fort Omaha, Nebraska, has the highest admission rate for each of the months; 17.83 per cent. of its strength in July, 13.89 in August and 16.24 in September. Fort Meade, South Dakota, has, on the whole, the best record, its admission rate for disease in July having been only 4.59 per cent. of its strength, in August 4.74 and in September 3.75. Nothing of separate sanitary interest was reported during the first two months; but on the September report it is noted that up to the end of the month no case of typhoid fever had been reported in the Department. A large part of the command was in the field on practice marches and at target ranges. During their field service the health of the troops was excellent.

The Army Medical School.—The second session of this school will begin Monday, Nov. 18, 1895, Colonel C. H. Alden, president of the faculty, delivering the opening address. The regular course will consist as heretofore of lectures on the duties of Army medical officers in peace and war, on military surgery, military medicine, and military hygiene with practical laboratory work in bacteriology and sanitary chemistry, hospital corps drill and first aid, horsemanship and the details of military inspections, parades and other ceremonies. Some changes have been made in the faculty recently on account of the retirement from active duty, at his own request after thirty years of service, of Lieut.-Colonel John S. Billings, who held the professorship of military hygiene, and of the assignment to other duty of Captain J. M. Cabell, who was assistant to the professor of military surgery and instructor in hospital corps drill and company administration. Colonel C. H. Alden, assistant surgeon-general, will continue to instruct the young officers in the duties of Army medical officers. Lieut.-Colonel W. H. Forwood, deputy surgeon-general, professor of military surgery, is understood to have made arrangements for practical work on the cadaver, a feature which was not embodied in the program of the first session of the Army Medical School. As the Examining Board had every facility for ascertaining the qualifications of the candidates accepted by it, the addition of this to the curriculum evidently means that it was not satisfied with the surgical skill displayed by the last graduates who came before it. Lieut.-Colonel D. L. Huntington, deputy surgeon-general, has been appointed professor of military medicine, relieving Major Charles Smart, surgeon, who succeeds Lieut.-Colonel Billings in the chair of military hygiene and continues to hold position as director of the chemic laboratory. Major Walter Reed, surgeon, has been announced as professor of clinical and sanitary microscopy and director of the pathologic laboratory, and Captain F. R. Keefer, in command of the hospital corps company at Washington Barracks, D. C., has been appointed assistant to the professor of surgery and instructor in hospital corps drill. The day's work of the student begins, except on Saturdays, with medico-military drill; the forenoon, according to the program, is to be spent over pathologic and bacteriologic microscopy; the afternoon in the work of the sanitary chemist with a lecture from 3 to 4 P.M. Arrangements have been made for special lecture courses: by Major Geo. B. Davis, judge advocate, U. S. A., on military law; by Dr. Godding, superintendent of the St. Elizabeth Hospital, D. C., on insanity; by Professor C. W. Stiles, Department of Agriculture, on the parasites of the human system, and by Dr. Robert Fletcher on the present condition of the Army Medical Museum and Library and the methods of literary research. The program requires the class to report on Saturdays to the Commanding Officer of the cavalry post of Fort Myer, Virginia, who will place its members under the care of a competent instructor in the riding hall. The lecture hour on alternate Fridays will be given up to the meetings of the Journal Club, which was organized in 1893 with a view to giving the young men opportunities of speaking in public and familiarizing them with the methods of medical societies. The following is a copy of the by-laws of the Club, adopted during the first session of the Army Medical School:

1. The name of this Association shall be the Army Medical Journal Club.

2. It shall be composed of the Medical Officers of the Army on duty in Washington or its vicinity, and of such other physicians as may be invited by the Surgeon-General of the Army, or by the President of the Club, to take part in its proceedings.

3. The objects of the Club are the mutual benefit and instruction of its members, by the reading of brief abstracts of important articles in medical journals; the examination of new books, apparatus, specimens, etc., acquired for the Army Medical Library, Museum and School, and such other methods as may, from time to time, be determined on.

4. The officers of this Club shall be a President and a Secretary, to be elected at the first meeting in November of each year.

5. The meetings of this Club shall be held in the lecture room of the Army Medical School, on alternate Fridays, from October 1 to May 1, beginning at 4 P.M.

6. The members of the Club shall be called upon in alpha-

betical order of their names, for summaries of journal articles, it being understood that no one shall occupy more than fifteen minutes and that the total length of the meeting shall not exceed one hour and a half. It is supposed that from six to eight persons will be called on for journal abstracts at each meeting.

The first meeting of the Army Medical Journal Club for the season of 1895-96, will be held at the lecture room of the Army Medical School, cor. 7th and B. Streets, S.W., on Friday, November 22, at 3 P.M.

Hospital Notes.

THE contract for the erection of the new Moline, Ill., public hospital has been awarded. The total cost of this institution will be $20,000.——By the will of Captain Lang, who with his wife was murdered in Gardenville, Md., November 4, his estate, valued at $200,000, is left to the St. Joseph Hospital at Baltimore.——The Chicago Hospital was formally opened November 9.——The regular annual meeting of the Waukegan, Ill., Hospital Association was held October 21. ——The annual report of the Maine General Hospital at Portland, shows that 1,061 patients were treated during the year.

Washington Notes.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended November 2 is as follows: the number of deaths reported at the health department during last week was 116. In the previous week they numbered 118. The relative conditions in regard to general health were quite similar during the two weeks, the exceptions being diseases of the brain and typhoid fever. The mortality from brain maladies rose from 10 to 19, and that from typhoid 10 to 17. One death each from diphtheria and smallpox occurred. Otherwise no deaths from any of the contagious diseases were reported. The infant mortality declined from 39 to 22, while the total death rate declined from 22.27 to 21.90. There were 93 births and 58 marriages reported; 25 deaths occurred in hospitals and 13 were reported by the coroner.

ELECTION OF OFFICERS IN THE POST-GRADUATE SCHOOL OF MEDICINE.—The board of incorporators of the Post-Graduate School of Medicine of the District of Columbia held a meeting at the office of Dr. Samuel Busey on the 5th inst. and elected officers for the ensuing year as follows: President, Dr. Samuel C. Busey; First Vice-President, Dr. J. Ford Thompson; Second Vice-President, Dr. W. W. Johnston; Secretary, Dr. G. Wythe Cook, and Treasurer, H. L. E. Johnson. The following committees were appointed: Curriculum, Drs. James Kerr, S. S. Adams, Edward L. Tompkins, W. H. Wilmer and E. M. Parker; Executive, Drs. H. L. E. Johnson, G. N. Acker and Thomas E. McArdle. The constitution and by-laws, as drafted by a committee consisting of Drs. H. L. E. Johnson, W. H. Witmer and E. L. Tompkins were adopted.

MEDICAL SOCIETY OF THE DISTRICT.—At the meeting of the society held on the 6th inst., Dr. T. O. Belt read an essay on "Consanguineous Marriage as a Factor in the Causation of Disease." This valuable contribution to science brought out a discussion which occupied the entire evening and was participated in by Drs. Butler, Shoat, Ritcher, Loring, Berman, Kleindschmidt, Chappell, W. W. Johnston, H. L. E. Johnson, S. S. Adam and Ward.

Detroit Notes.

THE BOARD OF HEALTH has given notice to the profession that the following cases are to be reported and placarded for quarantine: smallpox, varioloid, typhus fever, Asiatic cholera, diphtheria, scarlet fever, measles, glanders or farcy in man and wherever known in horse, and membranous croup. That typhoid fever, chickenpox and whooping cough are to be reported, not quarantined or placarded. The Health Officer on account of the spread of diphtheria has asked the Board to appoint physicians to examine the throats of all children attending the public schools; and when one is found suffering with sore throat, it is to be noted and the case followed to its home, so as to prevent as much as possible, the spread of diphtheria.

THE HEALTH OFFICE REPORT for week ending Nov. 9, 1895, shows: deaths, total 140; under 5 years, 37. Births, male 55, female, 45, total 100. The contagious diseases for same period: diphtheria, last report 41, new cases 37, recovered 24, died 11, now sick 43. Scarlet fever, last report 9, new cases 5, recovered 2, died 1, now sick 11. Smallpox, last report 1, new cases 1, recovered 1, died none; now sick one. The death list has been swelled by the awful disaster that befell the *Detroit Evening Journal* Building, in which several minor manufacturing concerns were established. This building was entirely destroyed by the boilers exploding, and resulted in the death of thirty-seven people, men, women, boys and girls, and a considerable number of injured and burnt. Some idea of the nature of the ruins can be arrived at when it is known that the last body to be removed from the *débris* had lain where found for fifty-nine hours, and was buried under tons of brick, stone and iron, and nearly all this time, night and day, the city had many of its laborers with horses removing the rubbish. This disaster has shown the public the advisability of having a physician for coroner. The jury that will hold the inquest upon the unfortunates, is composed of representative business men.

THE WAYNE COUNTY MEDICAL SOCIETY held its regular meeting on Thursday, November 7 at Dr. J. E. Clark's office. Dr. Wm. A. Hackett read a paper entitled, "Points of Diagnosis in Skin Disease."

THE DETROIT MEDICAL LIBRARY ASSOCIATION had a paper by Dr. E. S. Sherrill, entitled, "The Tests and Chemic Significance of Albuminuria."

THE MEDICAL COLLEGES have opened with an increased number of students; the Detroit College of Medicine having 275 in its medical department, 69 in the dental, and 34 in the pharmacy, and the veterinary coming last in number with 10. The Michigan College of Medicine and Surgery has enrolled in its senior class forty-one, junior twenty-five and freshman twenty. The pharmaceutic department to this school has been abolished this year.

St. Louis Notes.

THE MORTUARY REPORTS for the week ending November 9 give: deaths, 167; preceding week, 218; corresponding week of 1894, 153; death rate, 15.5 per 1,000. Deaths under 1 year, 24; under 5 years, 41; over 60 years, 36. Births reported 167.

CONTAGIOUS DISEASES reported during the week ending November 9: diphtheria, cases 136; deaths, 15; croup, cases 12, deaths 4; scarlatina, cases 9; typhoid, cases 5, deaths 1; measles, cases 12; cerebro-spinal fever, 1 case, 1 death; whooping cough 1 case, 1 death.

THE ST. LOUIS MEDICAL SOCIETY.—At the meeting of November 9, the scientific program was made up of an exposition of the methods of producing diphtheria antitoxin by Dr. Ravold, bacteriologist of the City Board of Health, and a general discussion of the effects of antitoxin in the treatment of diphtheria. Dr. Ravold explained the method used by the Departments, emphasizing the care taken in every step of the process, and especially the necessity for a painstaking selection of horses and proper care of them during their treatment with the toxin. He stated that the Board was now in a position to furnish a considerable amount of antitoxin of a definite strength. The dose of this product advised was 20 cc. Upon application the Board furnishes the antitoxin free for use in cases that have been properly diagnosticated, requiring only that a careful history of the case and the result of treatment be reported on blanks furnished for that purpose. The cases thus far treated had been too few to warrant any report, but the results had been entirely favorable. The Board of Health was anxious to meet every requirement in this service and invited criticism that the service might be made as highly efficient as possible. The speaker was most cordially congratulated on the work done, and the favorable reception given his paper showed how generally the new treatment has won its way into the favor of the profession. The general discussion was of special interest from the fact that it brought out no unfavorable experiences. All those who had used the antitoxin spoke of its effects in the most enthusiastic praise. Dr. Langan, who is using it daily, has not yet had a death from diphtheria since he began to administer it, and no unfavorable complications attributable to the antitoxin. He uses

the remedy to the exclusion of all others, so that his results are to be attributed to the effect of antitoxin alone.

The question of erythema and dermatitis with desquamation as occasional effects of the serum was raised by Dr. Grindon. In the experience of those who had used the antitoxin such phenomena had been but seldom developed, and in no case had they been of serious import. The complication was, in the opinion of Dr. Ravold, attributable to peculiarities of the serum other than that upon which its antitoxic power depended; for the serum of some horses produced erythema, etc., while that of others was without such effects. The preservatives used, carbolic acid and trikresol, were not without objection on this score, as well as on the score of their reduction of the immunizing value of the serum, and he had abandoned these stronger preservatives for camphor, which was sufficiently antiseptic for the short period elapsing between the production and application of the serum supplied by the Board of Health. He emphasized the necessity of waiting for two or three weeks after the last immunizing dose of the toxin had been administered to the horse, before drawing the blood for the separation of the serum, and pointed out how this precaution was apt to be neglected where commercial features attended the production of the antitoxin.

THE AESCULAPIAN SOCIETY.—Under the auspices of this society, Dr. Arthur E. Mink, of the St. Louis College of Physicians and Surgeons, gave a lecture at the college November 9, on "The Psychology and Philosophy of Shakespeare."

THE WABASH SURGEONS.—The annual meeting took place in the Southern Hotel, Nov. 12, 1895. The scientific program included the following papers: Delayed and Non-union of Fractures, by Dr. J. A. Wentz, Montpelier, Ohio; Responsibility for Railroad Accidents, by Dr. George R. Highsmith, Carrollton, Mo.; Hemorrhagic Diathesis, its Relation to Injuries, by Dr. M. Prichett, Glasgow, Mo.; How to Treat Wounds of the Face, by Dr. W. F. Taylor, Martinsburg, Mo.; Two Cases of Open Wounds of the Ankle Joints, by Dr. J. W. Young, Bloomfield, Iowa; Fracture of the Vertebræ, Dr. Burres, Sidney, Ill.; Fracture of the Femur, by Dr. Beardsley, Lafayette, Ind.; Traumatic Insanity, by Dr. James A. Duncan, Toledo, Ohio; Injury of Cranium and Contents, by Dr. Jared Spooner, Peru, Ind.; Diseases and Injuries of the Eye peculiar to Railroad Employes, by Dr. A. E. Pence, Springfield, Ill.; The Treatment of Typhoid Fever, by Dr. Ben. S. Lincoln, Missouri City, Mo.; Intestinal Obstruction Necessitating Laparotomy, by Dr. Joseph Payne, Edwardsville, Ill.; Color Blindness; Methods of Detecting It, by Dr. F. L. Henderson, St. Louis; Trephining the Spine in Cases of Fracture of the Vertebræ, by Dr. C. B. Stemen, Fort Wayne; Cranial and Intracranial Injuries, by Dr. W. H. Meyers, Fort Wayne.

A NEW CITY HOSPITAL.—The old City Hospital is notoriously unfitted for its purpose, beside inadequate in accommodations, and the Board of Health is discussing a project for the erection of a new building that shall meet all modern requirements.

A NEW MEDICAL JOURNAL.—*The Specialist* is the name of a new medical journal that is to make its first appearance this month. The publication office is at 2942 Washington Avenue. The journal will be devoted to diseases of the eye, ear, nose and throat, and is intended to occupy a middle ground between the journal of general medicine and the purely special journal. The name does not fairly convey this notion of its proposed function.

THE PRACTICE OF MEDICINE WITHOUT A LICENSE.—A certain Mrs. Billenkamp attended and treated a child afflicted with diphtheria, claiming to have a remedy that would cure the disease. The child died and the coroner's inquest resulted in holding Mrs. Billenkamp responsible for the child's death. She was prosecuted on a charge of practicing medicine without a license. The judge discharged the prisoner on the ground that she had not appended the letters M.D., to her name and therefore did not represent herself to be a physician. This decision has been given here in similar cases and it points out the loophole for the escape of all unlawful practitioners. The quack has only to advertise his ability to cure disease, being careful to avoid the use of M.D. It would be interesting to know whether the use of the abbreviation Dr. would be considered as of general or special significance in such a case; whether its general sense might not be used as a defense for its use by any one for a special purpose. The law should be framed to cover the spirit as well as the "letter" of the unqualified practitioner.

Louisville Notes.

DAMAGE SUITS.—The profession of this city is much gratified at the result of two suits for damages brought against two surgeons for alleged malpractice. In the Common Pleas division one Jno. M. Reager, sued Dr. W. O. Roberts for $20,000, the plaintiff maintaining that unskillful treatment was received at the hands of Dr. Roberts who treated him for a fracture sustained while at work for the railroad. Judge Field declared it a non-suit, and the case was thrown out of court. Clara E. Beadle brought suit against Dr. L. S. McMurtry, for, $5,000, alleging that he had placed her under the care of an incompetent nurse, who allowed her leg to be burned by a hot water bottle. The jury awarded Dr. McMurtry, a counter-claim of $500 for services rendered the patient. There was quite a little tilt between one of the witnesses for the defense, a prominent surgeon, and the lawyer for the plaintiff. When asked why, the answer was made that a fee for such an operation could range from $500 to $5,000; the witness replied that he thought $5,000 not an exorbitant charge to one who could afford to pay,—and in the custom of large fees, the lawyers set the pace, and the surgeons followed suit. The witness was dismissed and the sum asked for, awarded by the jury.

PRACTITIONERS CLUB.—At a meeting of this society, held November 13, Dr. Gavin Fulton read a paper upon "Leucorrhea."

THE PUBLIC SERVICES.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending November 9, 1895.

P. A. Surgeon L. W. Curtis, ordered to duty at the Indian Head Proving Ground.

P. A. Surgeon James Stoughton, detached from the Puget Sound Naval Station, and ordered to duty at the naval hospital, Yokohama, Japan.

P. A. Surgeon C. F. Stokes, detached from the naval hospital at Yokohama, ordered home and granted two months' leave.

Asst. Surgeon H. D. Wilson, detached from duty at the Indian Head Proving Ground, and ordered to duty at the naval hospital, Chelsea, Mass.

Asst. Surgeon C. D. Brownell, ordered to duty at Puget Sound Naval Station, on completion of his examination for promotion.

LETTERS RECEIVED.

Alta Pharmacal Co., St. Louis, Mo.; Ayer, N. W. & Son, Philadelphia, Pa.; Atkinson, Wm. B., Philadelphia, Pa.; Adams Express Co., Philadelphia, Pa.; Allister, A. M., Philadelphia, Pa.

Butterworth, Alice, Chicago, Ill.; Boyer, J. S., Chicago, Ill.; Beakley, J. R., Alma Center, Wis.; Breedlove, J. W., Fort Smith, Ark.; Bigelow, J. F., Chicago, Ill., (2); Bovee, J. Wesley, Washington, D. C., (3); Boehringer, C. F. & Stehne, New York, N. Y.; Brumder, Geo., Milwaukee, Wis.; Bovinine Co., New York, N. Y.; Bates, C. A., New York, N. Y.; Bellwood, W. S., Alliance, Neb.

Clarke, The Robt. Co., Cincinnati, Ohio, (2); Chaille, S. E., New Orleans, La.; Chambers, J. H. & Co., St. Louis, Mo., (3).

Doyle, G. P., Chicago, Ill., (2); Dewey, F. J., Chicago, Ill.

Eastman, Jos., Indianapolis, Ind.; Ellis, H. Bert, Los Angeles, Cal.

Fenn, O. M., San Diego, Cal.; Fest, F. T. B., Plank Road, Mich.

Gihon, A. L., New York, N. Y.; Gaensler, F. J., Madison, Wis.; Graham, D. W., Chicago, Ill.; Grinstead, J. F., Chicago, Ill., (2); Grothan, O., St. Paul, Neb.; Griffith, J. P. Crozer, Philadelphia, Pa.; Gates, L. M., Scranton, Pa.

Haddock, Wm. J., Iowa City, Iowa; Hayd, H. E., Buffalo, N. Y.; Hawkes, R. H., New York, N. Y.; Horwitz, Orvill, Philadelphia, Pa.; Herbert, J. Frederick, Philadelphia, Pa.; Harriman, W. E., Ames, Iowa.

Instant Off Co., Fort Huron, Mich.; Irving, P. A., Richmond, Va.; Irwin, Fairfax, Washington, D. C.

Jenkins, J. F., Tecumseh, Mich.; Jones, Joseph, New Orleans, La., (2); Judson, A. B., New York, N. Y.; Johnson, H. L. E., Washington, D. C.

Kemper, G. W. S., Muncie, Ind.; Kelrulff, B. F., Marshalltown, Iowa; Keener, The W. T. Co., Chicago, Ill.

Lord & Thomas, Chicago, Ill., (2); Lange, I., Chicago, Ill.; Lea Bros. & Co., Philadelphia, Pa.; Lentz, Chas. & Sons, Philadelphia, Pa., 2); Lyon, S. B., Chicago, Ill.

Mellier Drug Co. The, St. Louis, Mo., (2); Maltine Mfg. Co. The, New York, N. Y., (2); Miller, D. P., Huntingdon, Pa.; McEnroe, John F., Schenectady, N. Y.; Mansfield Book Binding Co., Mansfield, Ohio; Mattison, J. B., Brooklyn, N. Y.; Manley, Thos. H., New York, N. Y.; McDougal, J. G., New Lexington, Ohio; Mann, E. C., New York, N. Y.; Moore, J. W., Atlantic Mine, Mich.

Neff, Irwin H., Pontiac, Mich.

Ochs, Anthony, Hespeler, Ontario.

Payne, Geo. E., Atlanta, Ga.; Pring, Ernest, San Francisco, Cal.; Parker, W. T., Groveland, Mass.; Perekhan, J. S., Chicago, Ill.; Paquin Laboratories Paul The, St. Louis, Mo.

Richman, S. T., Chicago, Ill.; Richardson, W. L., Montrose, Pa.; Reeves, Jas. E., Chattanooga, Tenn.; Rinehard, C., Milwaukee, Wis.

Sekowsky, H., Milwaukee, Wis.; Schimmel, M. S., Baltimore, Md.; Salisbury, J. H., Chicago, Ill.; Scott & Anderson, Brownwood, Texas; Shlensky, I., Washington, D. C.; Sachtleben, E. A., Chicago, Ill.; Smart, Chas., Washington, D. C.; Stearns, Frederick & Co., Detroit, Mich.; Sander, The Enno M. W. Co., St. Louis, Mo.

Turnbull, Laurence, Philadelphia, Pa.

Vaughan, O. M., Covert, Mich.; Vovinckel, F. W., San Francisco, Cal.

Warren-Scharf Asphalt Paving Co., New York, N. Y.; Woolsey, E. H., Oakland, Cal.; Wilson, J. A. W., Chicago, Ill.; Wyeth, Jno. & Brother, Philadelphia, Pa.; Webster, E. H., Evanston, Ill.; Wyman, Hal C., Detroit, Mich.; Ward, Marshall R., Pittsburg, Pa.